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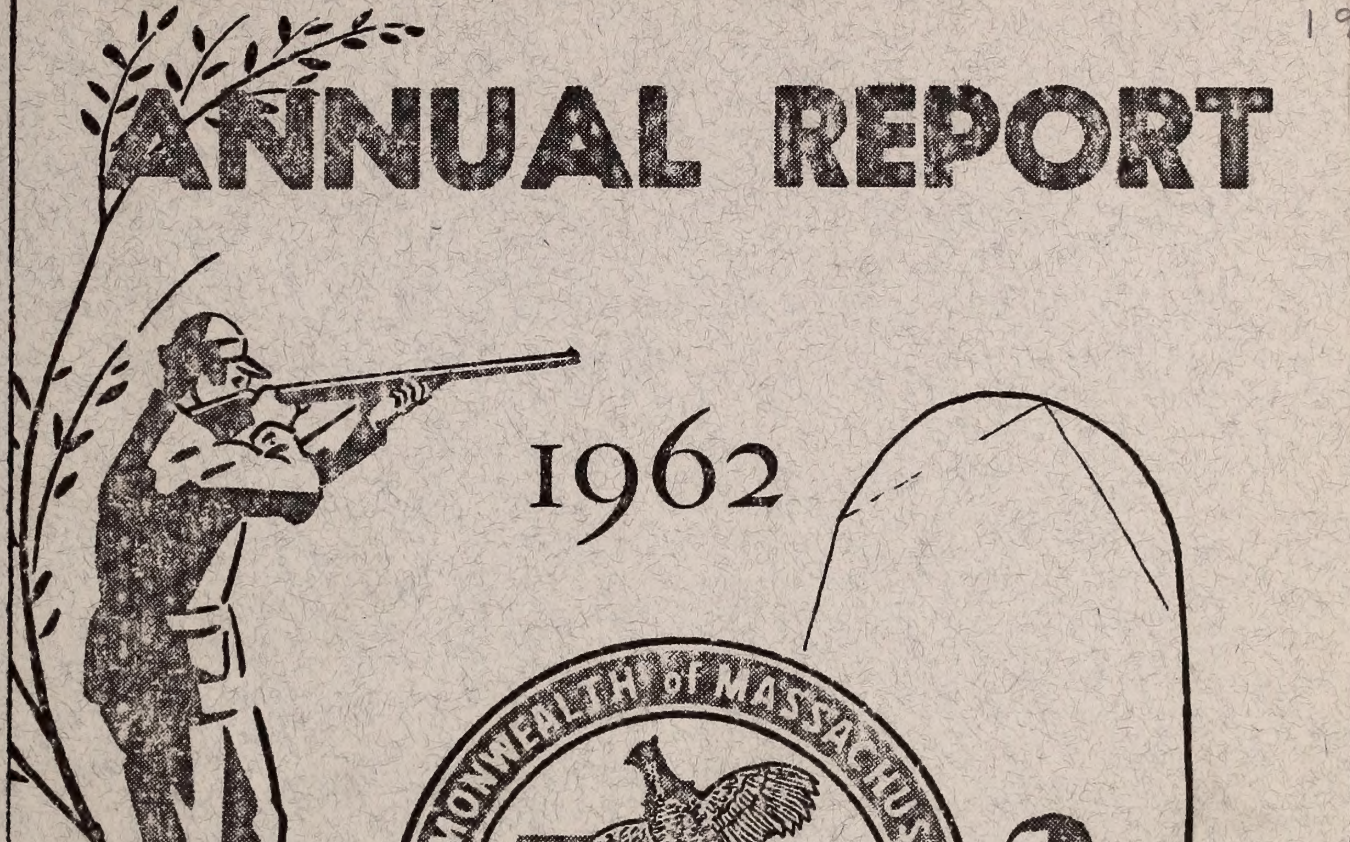

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COMMONWEALTH OF MASSACHUSETTS

DIVISION OF FISHERIES AND GAME

Ninety-seventh Annual Report

July 1, 1961 to June 30, 1962

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Publication Approved by State Purchasing Agent #9

THE COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME
73 Tremont Street, Boston 8

His Excellency, John A. Volpe, Governor of the Commonwealth,
the Executive Council, the General Court, and the Board of
Fisheries and Game.

Sirs:

I have the honor to submit herewith the Ninety-seventh Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1961 to June 30, 1962.

Respectfully submitted,
Charles L. McLaughlin
CHARLES L. McLAUGHLIN,
Director

ANNUAL REPORT OF THE FISHERIES AND GAME BOARD

July 1, 1961, through June 30, 1962

While detailed reports of all activities of the Division of Fisheries and Game will be found in the following pages, the Board of Fisheries and Game wishes to comment as follows:

Funds

The Board considers the most important problem facing it at the present time concerns revenue with which to operate the Division of Fisheries and Game and continue giving the public the outstanding service that has marked Division operations since establishment of the Board form of adminstration a number of years ago.

At the close of the fiscal year on June 30, 1962, the Inland Fisheries and Game Fund showed a balance of $169,484,04. This was $54,470.95 under the balance of the previous year.

Your Board believes it is sound management to retain a balance of approximately $200,000 to help absorb fluctuations in revenue and to provide a reserve for use in other emergencies, such as natural disasters, that might damage Division installations. The amount we have dropped below this desired reserve approximates the amount our revenue has decreased in the past year from a drop in license sales. If this trend continues, the Division may be in serious straits in another year.

Additional income from the marine gasoline tax (see section on legislation) may help solve this problem to some extent.

Your Board also feels an important problem is the matter of key personnel constantly being enticed away by better salaries in other states and the federal services. Over the years, a number of top personnel with several year's experience in Massachusetts have left for better income. Some of these men have been leaders who developed and led the Division's programs during the past ten years, bringing the Division from a backward status to its present prominence among state fish and game agencies. We believe that Massachusetts must realize it is competing with the rest of the country for top personnel, and place itself in a position to attract and hold the best men available.

It should be noted that economy of the strictest kind is being employed throughout the Division. Through the use of improved management methods including tighter controls, a policy of filling only the most essential vacancies, institution of automatic laborsaving devices where possible, and by having much of the basic research done by the University of Massachusetts Wildlife Research Unit and through funds from an outside grant, we have actually managed to provide increased and improved services on a total budget slightly less than last year.

Legislation

Several bills to facilitate Division operations, or to provide for important aspects of hunting and fishing, were passed in the 1961-1962 legislature. Most notable among the several items of legislation secured was the bill to earmark a portion of the unrefunded gasoline tax received from gasoline sold for use by boats toward establishment of public access sites on great ponds and the seacoast. Portions of the total funds will be allocated under this new law to the marine fisheries and boating programs of the Commonwealth, but a substantial amount is earmarked for acquisition and development of public access and a sum is also assigned to the general budget of the Division of Fisheries and Game. Receipt and expenditure of these funds will commence in the fiscal year beginning July 1, 1963.

Another most important item of legislation secured was the bill to provide for licensing of commercial shooting preserves in Middlesex, Essex and Norfolk counties. While this means that hunters who use such facilities will have to pay commercial operators for the privilege, such areas should go a long ways toward providing additional hunting opportunity in these counties, our most heavily populated and posted areas.

Regulations

Your Board, acting on the advice of technical personnel of the Division of Fisheries and Game, and after two public hearings, established a split opening for the fishing season. The results were experienced during the last fiscal year. All available reports indicate that the plan, to have the opening day on streams follow the opening on ponds, produced more enjoyable fishing for all who participated, besides giving Division personnel time to do a more effective job of stocking and reducing the pre-fishing season loss of stocked trout in streams.

Land Acquisition

A sizeable area in Huntington, Worthington and Chester was acquired in the past year for addition to our system of public hunting grounds. Smaller portions were purchased as additions to the Northeast Area, and eminent domain proceedings were instituted to clear title to an area purchased in Phillipston. Expired leases on several public fishing areas were renewed.

This program is the smallest in expenditure of any major program of the Division, not because of choice but because of legislative appropriations. Your Board hopes to expand land acquisition in the future, since a place to hunt or fish is the basic problem facing sportsmen.

Property owners who might wish to sell or donate land to the Division are invited to contact the Board or any employee of the Division. They will be assured of their property remaining forever in the public trust as a conservation area, devoted to multiple conservation uses for public benefit.

Such areas as now exist are heavily utilized throughout the year for many forms of outdoor recreation besides hunting, without charge to the users. Bird watching, blueberrying, target practicing, camping, horseback riding, nature walks, and conservation-education field trips, are all popular ways of enjoying and utilizing the Division of Fisheries and Game public hunting grounds. None of these uses contribute one cent to area acquisition and upkeep; the entire cost is borne by the Inland Fisheries and Game Fund, which is derived principally from sportsmen's licenses and federal excise taxes on firearms, ammunition and fishing tackle.

Fisheries Program

Our second major river reclamation project was completed this year, with reclamation of 13 miles of the Squannacook River.

The Squannacook reclamation, in which feeder streams were also treated, should produce good fishing for a longer period as reinfestation of trash fish species will be correspondingly delayed. In addition, ten trout ponds and four warmwater ponds were reclaimed. Results from the first major river to be reclaimed for fisheries management in Massachusetts, the Deerfield, indicate that the project was thoroughly successful although somewhat modified by our inability to reclaim the feeder streams.

Trout propagation resulted in a larger poundage and a larger number of "catchables" (trout six inches or more) being released. A decrease from last year in the total number of all sizes released in open waters is attributed to fingerlings . Significantly larger numbers of trout six to nine inches long and trout over nine inches were released this year, and a number of the fish were given "wild" coloration by special additives in the hatchery diet.

A three-year grant of $12,000 per year from the U.S. Public Health Service is being used to establish and operate a laboratory at Westboro to determine pesticide and insecticide residue levels in aquatic and terrestial animals, fish and birds, and to determine tolerance to these poisons of certain species of fish.

The Sunderland hatchery, our largest installation, was converted to a wholly yearling production schedule, in an effort to control a recurring disease problem.

Innovations such as plastic egg-hatching jars, selective fish toxicants used in reclamation, automatic feeding devices and other means, contributed to increasing efficiency and decreasing costs.

Game Program

The game program was marked by a record production of cock pheasants, totalling 58,450. A total of 72,938 birds of both sexes were produced and released during the year. The average per-bird cost of pheasant production has been significantly reduced.

Management work to improve public hunting grounds (also called wildlife management areas) continued, with hundreds of acres of new land being cleared, food patches planted and thousands of shrubs and trees planted to provide optimum cover and to retard successiin of unproductive forest growth. Hunter usage of public hunting grounds increased 19 percent over the previous year. One ecomomical result of such management work was approximately 50,000 board feet of lumber produced for use in Division installations.

Turkey introductions for the most part seem to be doing as expected. Those made with wild stock have reproduced in our covers while those made with game farm stock have not been as successful. It is too early to say whether these introductions will result in birds which may be trapped and transferred to other covers and thus result in a huntable surplus.

Waterfowl aerial census showed significant increases in the important species of ducks wintering in Massachusetts. Efforts continued to gain recognition at the federal level, where waterfowl regulations are initiated, for separate and more liberal waterfowl regulations for the northeastern states. Established procedures through the Atlantic Waterfowl Council have been made for several years in the effort to gain federal acceptance. At the close of the year, Massachusetts joined with other states in the northeast in a direct appeal to the federal government.

Information and Education Program

This program to acquaint our citizens with the wildlife resources of Massachusetts, and their conservation and utilization, and to familiarize the public with the policies and programs of the Division, continued on an expanded basis. A growing part of the program concerns provisiom of informational aids such as laws and regulations, printed guides to hunting and fishing areas, and other information of value to sportsmen.

A record number of news stories were issued during the year, averaging close to three releases a week. The use of television as an information medium continued to increase, with 31 separate feature shows presented, including one over a national network. The Division's television effort was honored with receipt of a first-place national award for excellence, awarded by the American Association for Conservation Information in June.

This association also held its annual 21st international conference, at Provincetown, in June, with Massachusetts and the other New England states acting as combined hosts.

The circulation of Massachusetts Wildlife, free bimonthly magazine published by the Division, continued to grow. Net gain for the year was 4,019 subscribers, for a total at the close of the fiscal year of 36,676. Magazines are estimated to be read by an average of three persons including the subscriber, which would place our magazine's estimated readership at more than 110,000. This is about or slightly above the average for similar magazines published by most states.

The Junior Conservation Camp came under the Division's full supervision during the year, and operation at the new site in central Massachusetts proved to be considerably improved, both from economic and curriculum viewpoints.

With all these various formal mediums for spreading the message of conservation, the Division does not overlook the importance of personal contact between its personnel and the public. Most of such contact is maintained by District personnel, who alone participated in more than 282 meetings with sportsmen's clubs, civic groups, youth organizations and other gatherings, as well as hundreds of uncounted contacts with individuals in the normal course of duties. Other personnel ranging from Board members, to staff officers, to employees at all levels, also attended many similar meetings and had personal contact with the public on many occasions. The increasing numbers of visitors to our pheasant farms and trout hatcheries provide's many opportunities for contact.

Board Personnel

Mr. Roger D. Williams, Natick, was elected Chairman, and Mr. Bert B. Nietupski, Hampden, was elected Secretary, at the meeting on March 28, 1962 at the University of Massachusetts.

There were no changes in Board personnel during the fiscal year.

The Board expresses its sincere thanks to all Division personnel for their continued exemplary performance of duties.

Respectfully submitted,

s/ Roger D. Williams,Chairman

Bert B. Nietupski,Secretary

Harper L. Gerry, Member

Lawrence Barbieri, Member

F. Stanley Mikelk, Member

FISHERIES PROGRAM

A good deal of the emphasis in fisheries management undertaken during the 1962 fiscal year was placed upon the evaluation phase of previous reclamations. Ten ponds reclaimed during the past year had been reclaimed in the past. Four ponds totaling 193 acres were subjected to rotenone treatment as the first step toward proper warmwater management. A total of 192,969 trout, mostly fingerlings, were used to restock waters newly-reclaimed for these species, while 72,897 warm-water fish of assorted species, predominantly largemouth bass, were used to restock managed warmwater ponds.

The Squannacook River, and its tributaries, was also reclaimed for trout management. Approximately 13 miles of river, totaling 100 acres, were treated and restocked. Trout which had been liberated as fingerlings in the fall of 1961, following the reclamation, made a substantial contribution to fishermen's creels during the spring of 1962. Population samples made toward the end of the reporting period indicated a high rate of trout survival and a slow return of undesirable species.

The three year evaluation phase of the Deerfield River reclamation was completed and required reports were submitted. The reclamation proved to be a success. Recontamination from un-reclaimed feeder streams is resulting in shortening the period in which the benefits of the reclamation show up in fishermen's creels. However the reclamation produced sustained fishing, a better quality of fish, and more fish in the creel, at a cost less than the same harvest would have been provided by stocking alone. The fisheries population of 49 ponds was checked by use of rotenone, electric shocking equipment, or both, and the results analyzed to determine a basis for future management.

Considerable time was expended by district personnel on the compilation of data to be included in the rights-of-way and access surveys of great ponds in Hampden, Hampshire, Franklin, and Worcester counties. Routine maintenance of physical plants and equipment continued to demand a large number of man-hours. Other time-consuming duties included stocking, reclamations, population spot checks, fish kill investigations, creel census, fish salvage, stream and pond surveys, public relations work involving club meetings, access problem work, and administration.

Sterlization and Sex Reversal Studies:

Experimental work on the use of hormones and castration agents to produce sterility in freshwater fishes was completed during the past period. A thorough screening of all probable compounds proved negative;the development

of such a technique must be considered a failure when applied to field conditions. The future usefulness of information gleaned during the project cannot now be evaluated, but may become apparent from the work of federal laboratories who have begun studies along similar lines, following Massachusetts' lead.

A new technique developed and now in general use is the selective poisoning of certain species of fish in unbalanced ponds. The material in use has been shown to virtually eradicate sunfish from treated areas while not affecting other fishes. A technical paper regarding Massachusetts' work in this field was presented at an international wildlife meeting.

A comprehensive "Trout Stream Management in Massachusett bulletin, was published and is available to interested sportsmen. It may be obtained from district, field, or administrative offices of the Division.

Laboratory facilities at Field Headquarters, expanded to provide space for a rapidly-growing analytical program, are being used in bio-assay and chemical analyses. Water quality determinations with regard to industrial and domestic pollution are presently being carried out. A $12,000 grant from the U. S. Public Health Service implemented the insecticide study already in progress, and allowed for the projection of this work over the Assabet, Concord, and Sudbury river drainages. Samples of soil and water, as well as tissues from fish, game, and humans, are being analyzed to determine residual levels of insecticides. The laboratory has furnished this information fo sportsmen's clubs, conservation organizations, the University of Massachusetts, and interested individuals.

Creel Census Activities:

Regular fisherman interviews were conducted during the past year on eight managed ponds within the Commonwealth, including Quabbin Reservoir. The latter, the only water of the group not on a reclaimed status, showed a decrease in total anglers. All others showed both an increase in fishermen and an increase in harvest. The census at Chauncey Pond showed irrefutable proof that the experimental stocking of walleye pike was a definite success.

Reclamation Program:

During the past fical year, 14 great or state-owned ponds were rehabilitated for sport fishes, as follows:

TROUT PONDS RECLAIMED

Pond	Town		Area in Acres
Little Pond	Plymouth		43
Mary's Pond	Rochester		81
Shubael Pond	Barnstable		56
Hoosicwhisick	Milton		23
York Pond	New Marlboro		35
Little Coachlace	Clinton		9
Scargo Lake	Dennis		53
Spectacle Pond	Sandwich		91
Grews Pond	Falmouth		13
Lovells Pond	Barnstable		56
		Total	460

WARMWATER PONDS RECLAIMED

Pond	Town		Area in Acres
Sherman Pond	Brimfield		86
Long Pond	Yarmouth		55
Johns Pond	Carver		23
Little Sandy Pond	Plymouth		29
		Total	193

During the past fiscal year, 58,931 largemouth bass and 3,866 chain pickerel were reared for initial stocking in the reclaimed warmwater ponds listed, and for corrective stocking in previously-managed areas.

Marine Sport Fisheries Inventory:

The Marine Sports Fisheries survey continued its inventory of marine sports fishing in Massachusetts' coastal waters. Results of the inventory indicate a continuing increase in the number of active small boats with fisherman success a little better than that of the previous year. A report on the current year, in conjunction with and comparison to the previous year's results, is nearly complete and will be published soon.

Project personnel have started an ecological study of shallow water areas, creeks, bays, and tidal inlets in relation to winter flounder.

Trout Propagation

Trout releases from the five state fish hatcheries, including additions from the U. S. Fish and Wildlife Service, totalled 1,872,683 trout. Of these, Massachusetts liberated 1,638,100 trout, of which over 162,000 catchables had been fed a special diet to improve their coloration.

The federal hatcheries at Pittsford, Vermont; Nashua, New Hampshire; and Hartsville, North Attleboro, Massachusetts, released 234,583 trout to areas designated by this Division.

Change-Over Program

In a change-over to an all-yearling production of brook and brown trout at the Sunderland Hatchery, all brood stock and two-year-old fish were liberated, accounting for the increased poundage reported last year. The hatchery was completely disinfected to eliminate a disease problem that had plagued the hatchery for several years.

Method of Incubation

The Sandwich Hatchery initiated a new method of incubating trout eggs by using plastic egg-hatching jars six inches in diameter in place of 12-foot rectangular hatching troughs. Each jar contains approximately 35,000 eggs and two will hold more than one trough. This method has simplified the care of trout eggs by saving space in the hatchery building, as well as helping in the control of fungus. The monetary saving is considerable; fifteen jars can be purchased for the price of one trough.

Nutrition

The Cortland formula was revised to include "full fishmeal" which contains all the dried fish solubles in the same proportions as originally produced from the raw fish. Toasted soybean oil meal was substituted for cottonseed meal because it is cheaper, contains a high protein content, and has

less fat. This formula can be used for pelleting or as a mix to supplement meat feedings.

Research feeding was carried on at all of the hatcheries with several brands of self-sustaining fish pellets. The success of this work varied with temperature, quality, and quantity of water. It was found that meat, added to the pellet diet, promotes growth during low water-temperature periods.

Coloration

Experimentation was continued again this year at the Montague Hatchery, using all three species of trout. Various paprika brands containing 194 to 229 mgs. of calculated total carotene per pound were selected. Using a two percent concentration, trout were given essentially "wild" coloration for approximately two cents per pound. By starting paprika additives in late fall, fish could be colored for spring stocking. Egg fertility and fry quality appeared to improve with the addition of paprika.

Water Resources

The most important factor in the growth of trout is water temperature. Growth is nearly nil in water from the freezing point up to 38° and increases rapidly as the temperature is increased. Personnel are constantly looking for additional well water which maintains a constant water temperature year-round.

A 600-gallon capacity turbine water pump was installed to increase the water supply at Sunderland during periods of drought. This unit was placed at the opposite end of an existing water line and had to be used extensively from January through June because of a record shortage of rainfall.

Vermin Control

The number of raccoons and predatory birds increased this year with noticeable losses of trout at all of the stations. Personnel are presently working with the U. S. Fish and Wildlife Service on a satisfactory method of control.

Reconstruction

Reconstruction this year at Sunderland was limited to cementing two raceways used in rearing brook trout. A new furnace was installed in addition to other general maintenance work.

The Palmer Station was used years ago chiefly for bass culture. During the past few years personnel have been engaged in reducing the surface area by filling in the sides of the ponds and building dikes for separation to raise trout. This work was continued this year.

Most of the construction funds allotted to Sandwich were used for the reconstruction of another series of eight rearing raceways, 80' x 10' x 3' , with cement walls, dams and connecting drains. A few wells were salvaged and more were sunk to supply the added pond area. Four earthen pools at East Sandwich were sheathed with native pine.

Rebuilding of raceways above the supply pond at Sutton was completed this year. Repairs were made to the sorting house and troughs installed for efficient use of that facility. A building on a hill to the north of the big pond was torn down and the materials salvaged. The hill on which the building stood was bulldozed into one-half of the big pond. Several 2" free-flowing wells were developed that materially helped in increasing production by 7,465 pounds over that of last year. This additional well water made conversion possible during the winter which accounts for the larger fish released from Sutton this year.

The Montague Hatchery reduced the surface area of two large rearing ponds for better water circulation. The larger of the two units was separated by a cement dam to facilitate better management. Cement sides were built in the catch-pond on the back-stream system now used for rearing fingerlings.

TROUT DISTRIBUTION IN MASSACHUSETTS FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1961 TO JUNE 30, 1962

BROOKS		BROWNS		RAINBOWS		
Under 6"	Over 6"	Under 6"	Over 6"	Under 6"	Over 6"	TOTAL TROUT
210,095	546,742	256,500	492,314	138,200	228,832	1,872,683

Total Trout Distributed 6-9"	788,723	
Total Trout Distributed 9" plus	479,165	
Total Catchables (6" plus)		1,267,888
Total Fingerlings (6" minus)	604,795	
GRAND TOTAL		1,872,683

POUNDAGE STOCKED BY STATIONS

STATION	TOTAL LBS.	
Montague	73,913	
Palmer	38,795	
Sandwich	66,894	
Sunderland	157,596	
Sutton	23,381	
State Poundage		360,579
North Attleboro	17,234	
Berkshire	6,958	
Nashua, New Hampshire	15,844	
Pittsford, Vermont	15,016	
Federal Poundage		55,052
GRAND TOTAL		415,631

(This table does not show fish retained for brood stock)

GAME PROGRAM

The game program continued as in past years. Emphasis has always been in giving the hunter the most for his money. This includes not only stocking birds and animals to provide the best return, but altering the open seasons to take advantage of changes in the production of game species in the wild. Land is being acquired by lease or purchase as fast as money allows and multiple use of this land is being encouraged. Division personnel are constantly combatting the "closed town" problem by advising town officials and interested individuals.

The bulk of the research and management program is financed 75 percent by Federal Aid Funds (Pittman-Robertson) and is so designated in this report.

FEDERAL AID PROJECTS

W-9-D--Statewide Development Project

As in the past, work on this project was done only on state-owned or leased management areas. These are the public hunting grounds which are located in the towns of Falmouth, Plymouth, West Bridgewater, Newbury, North Andover, Sudbury, Ayer, Westboro, Uxbridge, Hubbardston, Barre, Phillipston, Winchendon, Huntington, Chester, Peru, and Williamstown. The objectives are to make these areas accessible to the hunter; to provide best possible release sites for artificially reared game; and to encourage reproduction of indigenous species.

Maintenance: Headquarters buildings, storage sheds, and grounds were maintained by painting, cleaning, mowing, etc. Water control structures at Birch Hill, Hubbardston, and Westboro were checked regularly to keep them in proper operating condition. Bridges at Birch Hill and Hubbardston were checked for condition of planking and railings. Well over 50 miles of roads in all managment areas were maintained by gravelling, grading, snow plowing, and mowing or spraying the edges. Over 1000 signs marking roads, entrances, and boundaries were erected or maintained. In addition, over 10,000 signs were erected marking safety zones. Over 230 acres of perennials such as hay and lespedeza were maintained. Over 900 wood duck nesting boxes were maintained or replaced.

Development: Using a bulldozer, tractor-mounted brush cutters, herbicides, chain saws and axes, over 330 acres of land were cleared for future food patches or to encourage natural succession. Over 18,000 trees and shrubs were planted as field borders and dividers and, in groups, to provide protective cover and food. Over 200 acres of annuals and perennials were planted for food patches during the spring and fall.

Selective thinning in mature forests to encourage natural reproduction produced about 50,000 board feet of

lumber for Division use. The growth and fruiting of abandoned or wild apple trees was encouraged by release cutting and pruning.

Work continued on the Westboro beagle training grounds. Block cuttings were made in a grid pattern. Annual plantings of hay mixture and clover were top dressed. Trees and shrubs were planted to supply protective cover and food. Trapping was done to determine the current rabbit population. There was continued utilization of the area for training and trials.

W-35-R-Game Population Trend and Harvest Survey

Statewide Deer Harvest and Herd Composition: During the 1961 deer season (November 14 to December 8), a total of 3,084 deer were reported taken by hunters. Archers accounted for 45 deer during the archery season (November 14 to December 8). During the shotgun week (December 3 to December 8), hunters reported taking 1,561 bucks, 1,517 does and 6 deer were reported with sex not listed. Although the reported kill was 18 percent less than the 14-year average, it was 5 percent better than the 1960 season. A total of 681 deer were processed at the checking stations, which represents a 22.5 percent sample of the reported kill. The sex ratio of 1.0 males to 1.0 females has remained constant for a 15-year period. A seven percent decline in the kill was noted for the fawn class while a slight increase in the kill of 2-½ year and older deer was noticed. Deer weights by age classes were the same as in previous years. An analysis of the deer kill in the towns surrounding the Quabbin area indicated that the protected Quabbin herd has little effect on the outside kill. The kill in those towns fluctuates similarly to the statewide kill and does not stay at an abnormally high level.

Spring Quail Census and Population Composition: County quail call indices in 1961 showed a significant decrease in the Plymouth County population as compared to 1960. This decrease may have been influenced by the winter of 1960-1961 which was the most severe in 60 years. Barnstable and Bristol county populations showed no significant changes from 1960.

Winter Waterfowl Census and Harvest: Inventory flights made along the Massachusetts coast between October 16 and December 28 showed a pattern of waterfowl distribution and population increase similar to those of 1960. Increases were noted in all important species of waterfowl. The winter inventory, which was flown on January 8, 9 and 10, showed an increase in total waterfowl recorded of 44 percent over 1961. Black ducks were 29 percent higher than in 1961 and 31 percent higher than in 1960. Canada geese were 41 percent higher than in 1961 and 64 percent higher than they were found to be

in 1960. All puddle ducks were 28 percent higher than in 1961 and 27 percent higher than in 1960. All diving ducks were 51 percent higher than in 1961 and 15 percent higher than in 1960.

The 1960 postal survey sampled approximately six percent of all waterfowl hunters in Massachusetts. The total estimated kill was 55,054 waterfowl of which 70 percent were bagged and the remainder were crippled and lost. This is a six percent decrease from 1959. There were fewer hunters, but they hunted more often. Seasonal success per hunter was the same, 2.83 birds, but daily success was down about 18 percent. Black ducks made up 46 percent of the duck kill (comparable to 1959), but the estimated harvest was seven percent lower than in 1959. The wood duck harvest was 56 percent lower than in 1959. The scoter harvest was up 26 percent. The Canada goose harvest was up 10 percent. The harvest of all puddle ducks was down 13 percent and the harvest of all diving ducks was up four percent.

Hunter Use of Public Hunting Grounds: Estimated usage on all public hunting areas was 47,000 hunter trips in 1961. Usage on ten comparable areas showed an increase of 19 percent over 1960 and 32 percent over 1959. Peak hunting pressure was on the first two Saturdays followed by opening day and succeeding Saturdays. The majority of hunters came from within a 20 mile radius of the hunting grounds except in three areas where the majority came from a radius of 20 to 50 miles (Northeast, Fort Devens, Myles Standish). Hunting pressure during the week is noticeably higher on days after stocking has taken place. Pheasants and quail are killed in the greatest number, followed by cottontail rabbit, grouse, gray squirrel, white hare, woodcock and ducks.

Wood Duck Nesting Success: The check of nesting boxes in 1961 indicated that the resident breeding population of wood ducks has remained at a low level. While there has been no further decline in the recorded usage of nesting boxes, it is still far below the average number found in the years prior to 1959.

A trapping and banding program was carried out at Great Meadows National Wildlife Refuge during September, 1961. A total of 113 wood ducks were captured. The trapped sample consisted of 53 adults and 60 immatures, indicating poor brood survival.

Nesting boxes were refurbished and relocated during the winter in an effort to encourage better nesting success.

Experimental Turkey Stocking: A summary of survival and reproduction of wild turkeys released in Quabbin Reservation follows: Five hens and three toms were released in April, 1960, and seven poults were produced that spring. Nine additional hens were released in the fall of 1960, and three toms and two hens in the spring of 1961. A minimum of 16 wild turkeys, 12 hens and 4 toms, were present in the spring of 1961, and over 60 poults were produced, 48 of which survived until at least the first of September. The known population at that time was 64 birds. The turkeys became widely scattered and difficult to locate during the fall of 1961. Known mortality during the winter totaled ten turkeys. By April 1962, 17 wild turkeys could be located within Quabbin, leaving 37 unaccounted for. Unconfirmed reports suggested a portion of the 37 were still in the vicinity of the reservation in May of 1962.

Eleven wild turkeys, three toms and eight hens, were released in Mount Washington in January, 1961. By September, the population consisted of two adult toms, four broodless hens, and one hen with four poults. These birds are still present.

Twelve wild turkeys, three toms and nine hens, were released in April, 1961, in October Mountain State Forest. Two hens are known to have died. Two toms and five hens were located in June, 1962. A hen with three poults was reported during the summer. No information has been received on winter survival.

On October 11, 1962, a release of 16 wild turkey poults, six toms and ten hens, was made near Otis. A hen and tom were known to have died before December 5. Reports suggest the birds moved south towards Connecticut, but nothing is known of over-winter survival.

Mourning Dove Census: Data from 24 call-count routes in the spring of 1961 showed a breeding population index of nine. The 1962 survey, just completed, showed an index of ten. The average breeding index for states in the Eastern Management Unit was 788 in 1960 and 761 in 1961.

The number of doves counted in the fall was disappointingly low. On all management areas except in the southeast, doves were counted in the tens with a maximum of 47 seen on any day. Counts reached 500 at one area in the southeast and almost 200 at another. There was one observation during the day of about 500 doves on the Northeast Area. On the regular count, however, six days later, only 40 birds were reported.

ACTIVITIES SPONSORED ENTIRELY BY STATE FUNDS

Stocking

Surplus pheasant brood stock was released in May and June. Cocks and hens of the year were stocked at twelve weeks of age in August. Adult cocks were released the week before and during the upland season on huntable private land. Cocks were released twice a week on wildlife management areas throughout the season.

White hare were released after the season throughout the state to supplement brood stock.

White Hare Study

The objective of this study was to determine feasibility of holding and conditioning imported white hare at the game farms; to compare hunter success and survival data of conditioned hare versus unconditioned hare; to determine the feasibility of "put and take" hunting of snowshoe hare on public hunting grounds; and to evaluate the survival of imported hare.

During the winter of 1961-1962, the Division purchased 2,500 white hare which were imported from New Brunswick at a delivered price of $3.35 each. All hare received were tagged with numbered ear tags. In addition, those hare released on the public hunting areas were further marked by toe clippings.

Approximately 300 hare were weighed on arrival. Weights ran from 2.1 pounds to 3.7 pounds, with an average of 2.8 pounds. The average weight of a native hare is 3.2 pounds. Personnel at the game farms fed the hare a variety of foods including commercial rabbit pellets, horse feed, alfalfa meal, whole oats, and fresh apples. The period of time the animals were held ranged from 17 to 46 days.

In general, all hare that were held regained lost weight and reached the average native hare weight of 3.2 pounds within 14 to 17 days.

Two experimental releases of hare were made during the open season. Half of the hare released were conditioned and the other half were released directly upon receipt from the dealer. The stocking success was checked by contacting rabbit hunters and by live trapping. Hunters were interviewed and ear tags were collected in the release areas each weekend during the hare season. Out of 30 hares released on the Birch Hill area, eight conditioned hares and four unconditioned hares were shot during the period January 9 to February 3, 1962.

In addition, eleven native hares were reported taken in the same covers. Only one conditioned hare was accounted for by gunning at the other release area, in Hopkinton.

Intensive box trapping after the close of the season at the Birch Hill area resulted in capture of 28 hare of which three were conditioned, two unconditioned, and 23 native. From the compiled data, it is possible to account for 73 percent of the conditioned hare and 40 percent of the unconditioned hare at this area.

Damage Complaints

District personnel checked 57 beaver complaints. These were handled by live trapping, by dynamiting, or by issuing permits to landowners to destroy the beaver. Live traps were issued to clubs and individuals to take care of rabbit complaints.

Checking Stations

Five beaver pelt checking stations were maintained for two days at the close of the trapping season. A total of 669 pelts were examined.

Surveys

Three woodcock census routes were run to determine the spring breeding index.

Emergency Feeding

Personnel from the Northeast District assisted in ground feeding waterfowl during a period of emergency.

Field Trials

Improvements were made to field trial grounds at Westboro and Willowdale State Forest and aid was given in running trials.

Community Conservation Planning

Considerable time was spent supplying information to professional town planners. Numerous conferences were held with other State and Federal agencies such as Soil Conservation Service, Corps of Army Engineers, and the United States Fish and Wildlife Service, to plan cooperative programs. Sportsmen's clubs, town conservation commissions, schools, and individuals were assisted in planning their conservation programs.

Land Acquisition

District managers aided in the land acquisition program by examining land offered for sale and in gathering preliminary engineering data.

Game Propagation

An all-time high of 58,450 cock pheasants were distributed during this fiscal period of July 1, 1961 to June 30, 1962. The increase in production was utilized by more in-season stocking and to satisfy increased hunting pressure on the Division's public shooting grounds. At the same time, there was an increase in the number of public hunting grounds that were made available to the sportsmen in Massachusetts, thus calling for more birds.

Economy is still the keyword in game propagation however. Unit costs have been considerably reduced by applying stringent controls and better methods. Routine maintenance continues to be a necessity with new pen construction and replacement of wire an annual chore. Enlargement and improvement of the Sandwich and Wilbraham game farms has the priority over all new construction. A new brooder house was constructed at the Wilbraham Game Farm, using, for the first time on a Division game farm, an automatic self-feeder which should result in lower labor costs.

Three farms participated in the white hare program described elsewhere in this report in cooperation with wildlife technicians to streamline the annual white hare holding program.

A total of 2,566 Bobwhite quail were reared for release only on public hunting grounds. A small number of Coturnix quail were raised for field trial purposes.

GAME DISTRIBUTION

July 1, 1961 - June 30, 1962

Pheasants	Hens	Cocks	Total
Adults: Spring and summer liberations	4,762	819	5,581
Young: "A" stocking (12 weeks of age)	9,111	8,430	17,541
"B", "C", "PG" stockings (17-25 weeks old)	135	41,528	41,663
"SR" program	480	7,673	8,153
	14,488	58,450	72,938

Quail	Bobwhite	Coturnix	Total
Adults: Spring and summer liberations	14	385	399
Young: October and November liberations	2,552	2	2,554
	2,566	387	2,953

White Hare	
Northern varying, purchased	2,500

INFORMATION AND EDUCATION PROGRAM

The Massachusetts Division of Fisheries and Game, like its sister agencies in every state, uses publications, news services, films, radio, television, exhibits, youth programs, and personal contact to increase public understanding of the needs and methods of conservation. Provision of helpful information such as printed guides to hunting and fishing areas, regulations, etc., is an essential part of the program, and all personnel are also concerned with improving public understanding of and cooperation with the policies and programs of the Division.

Following are enumerated activities of the information and education program for the fiscal year ending June 30, 1962:

News Services

The public was kept informed throughout the year by press, radio and television, all of which have free access to all news sources within the Division, and receive the regular releases issued by the I&E section and district managers.

A total of 146 different news stories were issued during the reporting period via the following means: statewide releases from I&E - 58; area releases from district managers - 31; television news strips from I&E - 21; photo-feature releases by I&E and districts - 30.

A number of feature articles, ranging from local stories to articles in national magazines, resulted from or were aided by assistance from Division personnel.

Massachusetts Wildlife

Circulation of this bi-monthly free magazine showed a net gain for the year of 4,019 subscribers, with a total mailing list at the close of the reporting period of 36,676. Most similar publications are estimated to be read by an average of three persons per copy, which would place Massachusetts Wildlife's estimated total readership at more than 110,000. In addition, approximately 2000 copies of each issue are distributed as single pamphlets in reply to inquiries that can be answered by information contained in the magazine.

Audio-Visual Aids

During the year, the audio-visual office prepared and presented 35 television programs. Nineteen of these were 25-minute presentations on the "Dateline Boston" series over WHDH-TV, 12 were "Critter Corner" programs over WBZ-TV, and two were presented on the "RFD 3" program over WTIC-TV in Hartford. In addition, film was loaned to the ABC-TV network for presentation on "Editors Choice".

The "Dateline Boston" series of programs prepared by the Division of Fisheries and Game received a first place

national award as the "best television program produced in cooperation with a state or provincial agency in 1961". The program, viewed by the judges of the American Association for Conservation Information, concerned pollution in Massachusetts streams.

During the reporting period the Division continued its cooperation with radio stations in the Commonwealth through personal contact and tape recordings by personnel in the wildlife districts and other installations.

One new film "A Place to Hunt", was added to the film library. This film shows some of the work that goes into the management of a public hunting area and ends with a quail and pheasant hunt on Cape Cod.

A total of 414 films were loaned to groups from the Division film library. These films were viewed by approximately 33,150 people.

Ten exhibits at sportsmen's shows and fairs were assisted, primarily through provision of literature and live specimens by the district managers and I&E. Panel exhibits prepared by the I&E Section were used on several occasions.

Publications

New publications added to the list maintained for free public distribution were Trout Stream Management in Massachusetts, a 94-page treatise on this complex subject, and the Sport Fishing Institute's Conservation Chart. A number of publications which had become depleted were recorded.

The current year's Annual Report, Stocked Trout Waters Guide, Fish and Game Laws, Closed Towns List, Sportsmen's Organization List and Migratory Game Regulations were compiled and published.

Tours and Demonstrations

District personnel conducted eight "Show Me" tours wherein members of the press and prominent individuals were taken on conducted tours of Division activities. District personnel also conducted four field demonstrations for scout and sportsmen's groups, including one major public demonstration to promote fishing in Lake Monponsett, which was attended by over 300 people.

Meetings

District personnel attended or participated in 282 meetings of sportsmen's clubs, civic groups, fraternal organizations, youth groups,etc. Other personnel throughout the Division participated in many similar meetings. Several personnel spoke at public school gatherings and other meetings as a conservation-education effort.

The 21st annual international conference of the American Association for Conservation Information was held at Provincetown in June. I&E personnel coordinated the program, assisted by the southeast, northeast and central wildlife districts.

Conservation Education

I&E personnel continued to assist in functions of the State Advisory Committee for Conservation Education.

The 13th annual session of the Massachusetts Junior Conservation Camp, its first year under direction of the I&E Section, was run at Thompson's Pond, Spencer. A total of 119 boys completed the two-week course. The new installation provides housing, messing, training and recreational facilities superior to the former site in the Berkshires. It also made possible a far more efficient operation, and improvement in the quality of the training given was evident even during this first year at the new site. At the close of the reporting period, plans for the 1962 camp were rapidly being completed. They included an expanded staff, increased number of campers, improved equipment, expanded and better coordinated instruction program, and the innovation of measurement and achievement tests.

Printing, Posters, Misc.

I&E continued to handle all editing, printing and publishing functions for the Division.

Approximately 11,000 "Safety Zone" posters were distributed to landowners through the districts and direct from I&E, and the program of erecting metal highway signs calling attention to hunting safety zones was expanded by an additional 200 signs.

LAND ACQUISITION

During the year the Division took title to a thousand-acre tract of land in the towns of Huntington, Worthington and Chester thus opening up a new sizeable public hunting area. This area was acquired primarily for hunting and is near the mile-long tract of Little River purchased a few years ago.

Negotiations were all but completed for the purchase of more land adjoining the Phillipston Area. Another tract adjoining this area, which did not have title acceptable to the state, was in the process of being acquired by right of eminent domain. The purchase price was agreed upon but eminent domain was the only way for the Division to acquire good title to the property. The General Court passed bills filed by the Division asking for the right to use eminent domain in the acquisition of the above mentioned land and two parcels adjacent to the Peru area, which were in the same category.

More small parcels were added to the Northeast area and negotiations were under way for the acquisition of a sizeable addition to this area.

Many parcels varying in size from a few acres to sizeable tracts, which were brought to the attention of the Division as being on the market, were investigated but in all cases the asking price was beyond the means of the Division. Negotiations to reduce the asking price to a figure more in keeping with our budget failed to succeed.

A detailed ownership map of land along the Millers river was completed and attempts were made to purchase isolated parcels.

Leases which expired on the public fishing grounds were renewed and ownership maps brought up to date.

Surveys were made of some of the Division holdings to establish boundary lines.

The Realty Section handled all correspondence with other public agencies regarding lands owned by the Division and other related subjects, giving assistance whenever possible.

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

General:

Dr. Earl E. Deubler, Jr. was employed by the Department of Forestry and Wildlife Management, University of Massachusetts, as Associate Professor of Fisheries Biology.

The new Natural Resources Building on the campus is more than half finished and the Department should move in within the next year.

Wild Turkey Project:

Production of poults from wild turkey stockings has been very successful this year. At least sixty known poults were produced in June, and survival in September has been good. One flock of fourteen turkeys on the East side of Prescott Peninsula has been observed. It is not known what parent stock is involved in this flock, but they may well be of pure West Virginia strain. A few birds were transferred from Mount Washington to October Mountain, and at least seventeen turkeys are on October Mountain.

New England Cottontail Study:

A graduate student working on the productivity of the two species of cottontails found in Massachusetts is completing his thesis in absentia. This study is being continued on an island in Quabbin Reservation.

Cadwell Forest Study:

A number of roads in Cadwell Forest were fertilized and seeded to clover by the previous investigator. These roads were receiving heavy utilization by deer, rabbits and grouse in the late summer. Two graduate students worked on this forest all summer experimenting with methods for clearing open areas in the second growth forests.

Pesticide-Wildlife Project:

A second contract with the Bureau of Sport Fisheries and Wildlife (United States Fish and Wildlife Service) was signed at the beginning of the fiscal year. A graduate student will conduct exhaustive laboratory tests to ascertain the rate of absorption and excretion of DDT in Towhees. It is hoped that some of these findings may be correlated with field observations and collections of the area.

Woodcock Project:

A second draft of a manuscript of twelve years of woodcock research was completed.

Bird Control Project:

Dr. David Wetherbee of the Bureau of Sport Fisheries and Wildlife who is assigned to the Cooperative Unit at the University, has been continuing intensive work on gulls, starlings and red-winged blackbirds.

Unit Publications:

Wetherbee, David K. & N. S. Wetherbee, 1961. Artificial Incubation of Eggs of various Bird Species, and some Attributes of Neonates. Bird Banding, 32: 141 - 159.

Sheldon, William G. & F. Greeley, 1962. Woodland as Wildlife Habitat. Publication 389, Forestry Series No. 9, Cooperative Extension Service, College of Agriculture, University of Mass., Amherst.

Sheldon, William G. & E. M. Pollack, 1962. Woodcock and Grouse - An Earlier Season. Mass. Wildlife, July-August, Vol. XIII, No. 4.

Meanley, Brooke & D. K. Wetherbee, 1962. Ecological Notes on Mixed Populations of King Rails and Clapper Rails in Delaware Bay Marshes, Auk 79: 453-457.

Wetherbee, David K. & L. M. Bartlett, 1962. Egg Teeth and Shell Rupture of the American Woodcock, The Auk: 79, 117.

GENERAL ADMINISTRATION

HOW THE SPORTSMAN'S DOLLAR WAS SPENT

Fiscal Year July 1, 1961 to June 30, 1962

ADMINISTRATION	3304-01			
Administration.................		$88,309.79		
Fish and Game Board............		695.00	$89,004.79	7%
Information & Education			66,854.60	5%
FISHERIES MANAGEMENT				
Fish Hatcheries	3304-42	-	317,274.58	24%
Management	3304-42	105,821.78		
Striped Bass & Marine Fisheries Investigation	3304-46*	9,372.58		
Fish Restoration Projects	3304-47*	39,846.05		
Management	3304-51	71,376.48	226,416.89	17%
WILDLIFE MANAGEMENT				
Game Farms	3304-51	-	259,674.57	19%
Management	3304-51	71,376.48		
Wildlife Coop. Unit	3304-44	7,990.38		
Wildlife Restoration	3304-53*	128,851.03	208,217.89	15%
LAND ACQUISITION	3304-53*	-	27,290.00	2%
LAW ENFORCEMENT	3308-05*	6,787.85		
	3308-07	8,411.44		
	1003-03	137,607.72	152,807.01	11%
			$1,347,540.33	100%

*Continuing accounts

Expenditures under:
3304-46
3304-47
3304-53
reinbursed 75% by
Federal funds

RESERVE IN INLAND FISHERIES AND GAME FUND
AS OF JUNE 30, 1962 - $169,484.04

APPROPRIATIONS AND EXPENDITURES

July 1, 1961 to June 30, 1962

ACCOUNT NO.	TITLE	APPROPRIATIONS	EXPENDITURES & LIABILITIES	REVERTED
3304-01	Administration	$ 161,057.00	$ 155,859.39	$ 5,197.61
3304-42	Fisheries Management	501,001.00	423,096.36	77,904.64
3304-51	Wildlife Management	421,995.00	402,427.53	19,567.47
	Totals:	$ 1,084,053.00	$ 981,383.28	$102,669.72

		CONTINUING APPROPRIATIONS	EXPENDITURES	BALANCE FORWARD
3304-46*	Striped Bass and Marine Fisheries Investigation	$ 17,542.75	$ 9,372.58	$ 8,170.17
3304-47*	Fish Restoration Projects	85,916.17	39,846.05	46,070.12
3304-53*	Wildlife Restoration Projects	241,147.23	156,141.03	85,006.20
	Totals:	$ 344,606.15	$ 205,359.66	$139,246.49

*75% reimbursement from Federal funds

SUMMARY OF FISH & GAME INCOME

July 1, 1961 to June 30, 1962

Fishing, Hunting & Trapping Licenses	1,146,633.00*
Special Licenses, Trap Registration & Tags	4,945.16**
Alien Gun Permit	83.25
Rents	3,373.50
Misc. Sales & Income	7,994.65
Pittman-Robertson Federal Aid	80,101.26
Dingell-Johnson Federal Aid	50,824.24
Court Fines	6,880.20
Refunds Prior Year	41.86
Archery Stamps	4,475.00
	$1,305,352.12

* See Detail Sheet #1
** See Detail Sheet #2

Detail Sheet No. 1

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Fiscal Year July 1, 1961 to June 30, 1962

Licenses	Price	Number	Gross Amount	Fees Retained by Clerks	Net Returned to State
Series 1, Res. Cit. Fishing	$ 4.25	105,628	$ 448,919.00	$ 26,236.50	$ 422,682.50
Series 2, Res. Cit. Hunting	$ 4.25	75,594	321,274.50	18,776.75	302,497.75
Series 3, Res. Cit. Sporting	$ 7.25	38,669	280,357.50	9,618.75	270,738.75
Series 4, Res. Cit. Minor Fishing	$ 2.25	17,631	39,672.00	4,388.00	35,284.00
Series 4A, Res. Cit. Female Fishing	$ 3.25	17,254	56,075.50	4,288.25	51,787.25
Series 5, Res. Cit. Minor Trapping	$ 2.25	211	474.75	52.25	422.50
Series 6, Res. Cit. Trapping	$ 7.75	593	4,595.75	145.25	4,450.50
Series 7, Non-Res. 7-day Fishing	$ 4.25	2,173	9,235.25	538.50	8,696.75
Series 9, Non-Res. Fishing	$ 8.75	2,336	20,439.00	573.25	19,865.75
Series 9, Alien Fishing	$ 8.75	437	3,823.75	109.25	3,714.50
Series 10, Non-Res. Hunting	$15.25	1,712	26,123.25	402.50	25,720.75
Series 12, Duplicate Licenses	$ .50	2,970	1,485.00	0.00	1,485.00
Series 15, Res. Cit. Sporting	Free	15,771	0.00	0.00	0.00
Series 17, Old Age Assistance, Paraplegic and Blind Fishing	Free	444	0.00	0.00	0.00
		281,423	$1,212,475.25	$ 65,129.25	$1,147,346.00
Refund to City and Town Clerks for the year 1961					713.00
					$1,146,633.00

Detail Sheet #2

ANALYSIS OF SPECIAL LICENSES ISSUED UNDER SECTIONS 48, 68A, 102-3-4-5-6-7 and 112-A, Chapter 131, G. L. during the FISCAL YEAR ENDED -- June 30, 1962

TYPE OF LICENSE	NUMBER ISSUED	RECEIPTS
Trap Registrations:		
Initial	114	
Renewal	640	$274.00
Fur Buyers:		
Resident	27	
Non-Resident	-	$270.00
Taxidermists:	51	$255.00
Propagators:		
(Special Fish)		
Initial	19	
Renewal	193	$231.00
(Fish)		
Initial	8	
Renewal	83	
Duplicate	1	$289.50
(Birds & Mammals)		
Initial	75	
Renewal	280	$1,215.00
(Dealers)		
Initial	2	
Renewal	84	
Additional	373	$635.00
(Ind. Bird or Mammal)		
Initial	28	
Renewal	55	$55.50
Shiners for Bait	247	
Duplicate	1	$1,235.50
Field Trial Licenses	3	$30.00
Quail for Training Dogs:		
Initial	13	
Renewal	31	$158.00
Tags:		
Game	2,583	
Fish	16,751	$296.66
	TOTAL:	$4,945.16

LEGISLATION

The following laws directly affecting the Division of Fisheries and Game were enacted during the legislative session of 1962.

CHAPTER 145, ACTS, 1962:	An Act increasing the fine for the taking of Wild Turkeys.
CHAPTER 171, ACTS, 1962:	An Act requiring the wearing of a daylight fluorescent red or orange color clothing or material while hunting during the deer season.
CHAPTER 379, ACTS, 1962:	An Act further defining the powers of the Director of the Division of Fisheries and Game relative to the propagation of fish.
CHAPTER 438, ACTS, 1962:	An Act permitting hunting on legal holidays.
CHAPTER 441, ACTS, 1962:	An Act authorizing the Director of the Division of Fisheries and Game to acquire certain lands in the town of Petersham.
CHAPTER 451, ACTS, 1962:	An Act authorizing the Director of the Division of Fisheries and Game to acquire certain lands in the town of Peru.
CHAPTER 507, ACTS, 1962:	An Act authorizing the Director of the Division of Fisheries and Game to convey certain land in the town of Mashpee.
CHAPTER 620, ACTS, 1962:	An Act authorizing the Director of the Division of Fisheries and Game to issue permits for commercial shooting preserves.
CHAPTER 715, ACTS, 1962:	An Act relative to the promotion and development of Marine Fisheries of the Commonwealth.
CHAPTER 66, Resolves,1962:	Resolve providing for an investigation and study by the Division of Fisheries and Game relative to the feasibility of issuing free certificates or licenses to fish, hunt or trap to certain persons.
CHAPTER 731, ACTS, 1962:	An act authorizing the commonwealth to grant easements over, under, across and upon certain land, for the transmission of electric power, to Western Massachusetts Power Company.

SUMMARY OF OUTSTANDING REGULATIONS; AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1962.

August 4, 1948. Rules and regulations for the artificial propagation and maintenance of fish.

August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.

July 14, 1952. Rules and regulations for hunting with bows and arrows.

August 12, 1953. Rules and regulations governing sale of protected fresh water fish by licensed dealers in Massachusetts.

March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts, effective April 9, 1954.

January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.

April 3, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire, effective April 10, 1956.

February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.

February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.

October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.

October 20, 1959. Rules and regulations relating to the hunting of pheasants, quail and ruffed grouse in Massachusetts.

November 1, 1959. Rules and regulations relating to the hunting of deer in Massachusetts.

September 10, 1960. Interstate fishing regulations on Wallum Lake.

September 10, 1960. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.

September 10, 1960. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.

September 10, 1960. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.

August 30, 1961. Migratory game bird regulations 1961-1962.

October 1, 1961. Rules and regulations relating to hunting of pheasants, quail and ruffed grouse in Massachusetts.

December 23, 1961. Rules and regulations regarding Lake Garfield in the town of Monterey.

April 16, 1962. Rules and regulations relating to the taking of certain fish in Massachusetts.

May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the commonwealth.

PERSONNEL

Retirements, 1962 fiscal year

J. Albert Torrey, Chief Game Culturist, May 31, 1962.

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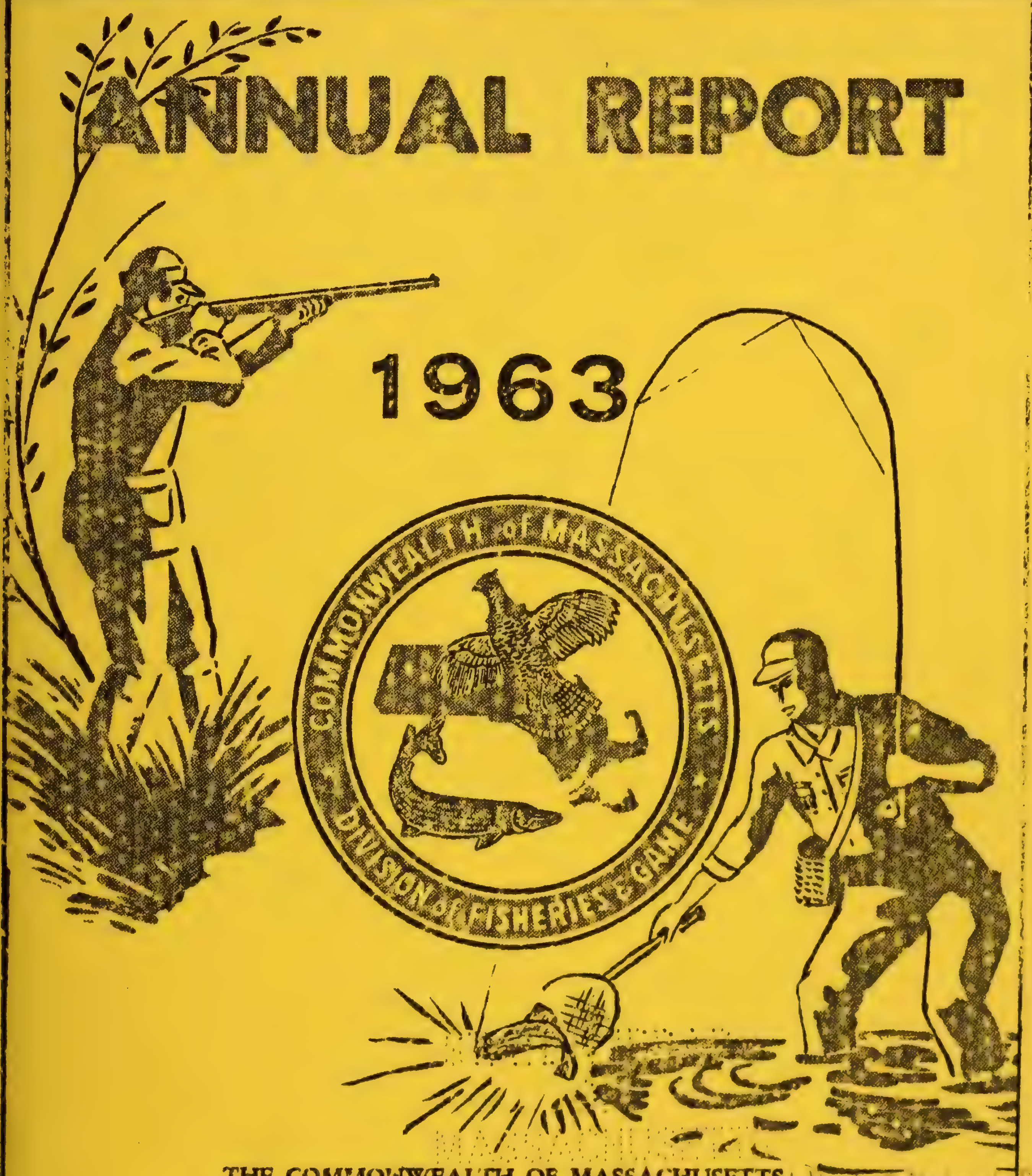
ANNUAL REPORT

1963



THE COMMONWEALTH OF MASSACHUSETTS : Dept. of Natural Resources
DIVISION OF FISHERIES AND GAME
73 TREMONT STREET, BOSTON 8

[illegible]
DEC 30 1969
STATE HOUSE, BOSTON

The Commonwealth of Massachusetts

Division of Fisheries and Game

73 Tremont Street, Boston 8

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His Excellency, Endicott Peabody, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game.

Sirs:

I have the honor to submit herewith the Ninety-eighth Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1962 to June 30, 1963.

Respectfully submitted,

Francis W. Sargent

FRANCIS W. SARGENT
DIRECTOR

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME
Ninety-eighth Annual Report
July 1, 1962 to June 30, 1963

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Publication Approved by State Purchasing Agent #9

IN MEMORIAM

CHARLES L. McLAUGHLIN

Director of the Division of Fisheries and Game, passed away on January 4, 1963, as a result of injuries sustained in an auto accident.

He began his career with the Division in 1940, working on pheasant research while a graduate student at the University of Massachusetts. After receiving his BS and MS degrees, McLaughlin served four years with the U. S. Marines. He returned to the Division in 1946 to work on deer studies, then left for three years as an instructor at the University of New Hampshire. McLaughlin returned to Massachusetts in 1949 as federal-aid coordinator. He was appointed Chief Game Biologist in 1954 and Director of the Division of Fisheries and Game in 1955.

LEWIS A. BRYANT

Veteran culturist in charge of the Marshfield state game farm since September, 1941, passed away as a result of a heart attack on January 12, 1963.

Beginning his career with the Division of Fisheries and Game at the Wilbraham game farm in 1930, Bryant was appointed assistant fish and game culturist in 1936 and remained in that capacity until his appointment and transfer as culturist in charge of the Marshfield game farm.

REPORT OF THE FISHERIES AND GAME BOARD

In past years it has been the custom to devote this portion of the annual report to a summary of some of the more important highlights of the year's operations, otherwise reported in complete detail under the various section headings.

This year, however, your Board feels that there are certain fundamental problems, and our approach to solution of those problems, which should take precedence in the Board's report.

The functions of the Division, also true for other modern fish and game agencies in states across the country, include such responsibilities as the acquisition and management of land and water areas for a multitude of different forms of outdoor recreation besides just hunting and fishing; vital wildlife research, reclamation of public waters to improve sport fishing, propagation of game birds and fish, education of youths and adults alike to the importance of wise use of all natural resources, establishment of sound conservation laws, providing technical guidance to private landowners, other conservation agencies, to town conservation commissions, community planners and highway construction agencies.

It is important to realize that the total budget of this Division is almost entirely borne by sportsmen. Except for relatively limited funds from marine gasoline taxes and the federal accelerated public works program, this Division's revenue comes entirely from sale of fishing, hunting and trapping licenses, related permits, and federal-aid reimbursements accruing from federal excise taxes on firearms, ammunition and fishing tackle.

Despite the fact that this Division's program is supported by sportsmen, all the citizens of Massachusetts share directly in its benefits. For example, 19 wildlife management areas are owned or controlled by this Division, all of which are open to public uses all year long. While hunters utilize these areas only during the short hunting seasons, picnickers, campers, hikers, school classes, youth organizations and a host of other recreationists can and do use the areas throughout the year. On one such area alone, last year, the number of recreation trips by the general public exceeded the number of trips by hunters by about 25 percent! This non-sportsman usage contributed nothing to the cost of acquiring and maintaining these areas.

The aesthetic and economic importance of wildlife of all types to our citizens has been well established. It is sufficient to note that the Commonwealth's responsibility to maintain and manage our wildlife population for the benefit of all citizens is entirely charged to the Division

of Fisheries and Game.

Obviously the two major problems affecting our discharge of this responsibility are land and money. We cannot give a glowing report of land acquisition since this Division has never received sufficient funds for this purpose. We have been able to acquire several parcels by acquisition and the use of others through agreements with other agencies of the State and Federal governments, but the program is much too far behind the increasing need. The time is long past when the Commonwealth can safely ignore the rapidly increasing demand for public recreational areas and particularly for wildlife management areas and access sites to our ponds and streams. Hunter usage of wildlife management areas, for example, increased 7 percent last year and 21 percent over 1960.

A closely related problem, that of adequate funds to continue the Division's programs, is of prime importance. Accordingly, every effort has been made to closely analyze all operations of the Division. All budget requests of the Division are closely scrutinized and only the most essential items are retained. The Division's annual budget requests are basic, essential budgets without any luxuries whatsoever. Once a budget is appropriated, every expenditure is closely watched. Through the use of improved management methods, institution of labor-saving devices where possible, and through cooperative agreements with other agencies, we have actually managed to provide increased and improved services on a total budget considerably less than in former years.

In the propagation field, we have greatly increased the number of pheasants reared and released. Our production of cock pheasants totalled 62,217 for the fiscal year just ended, about twice that of ten years ago plus 14,456 hens. Our production of trout totalled 1,667,706 fish including 174,401 received from federal sources. This totals about a third of a million more than ten years ago. It is important to note that both records have been set with no increases in personnel, at lower unit costs, and by facilities which are many years old and in need of repair and modernization.

On January 4, the Commonwealth of Massachusetts lost a dedicated, unusually accomplished public servant in the unfortunate death of Fisheries and Game Director Charles L. McLaughlin.

On March 1 of this year we were extremely fortunate to secure as director; Francis W. Sargent, an experienced administrator. Sargent has been Director of Marine Fisheries and Commissioner of Natural Resources in Massachusetts, and returned to Massachusetts from a four-year assignment as Director of the Outdoor Recreation Resources Review Commission in Washington, D. C. He immediately instituted, with the Board's approval, three separate studies of key problems affecting the Division.

They are: A management analysis of the license structure, issuance, and sales procedures; a review of the salary and organizational structure of the Division; and a study of the needs and possible methods of increased land acquisition.

The first of these, the license study, has been completed and a report filed with the Board. We have already adopted the first recommendation of this study, which is to convert our 14 different printed license forms to two simpler, basic forms. We anticipate an estimated savings of nearly $10,000 a year in printing costs from this one step. Other recommendations to improve the public service, through making these licenses more easily available to the public and by other changes in the licensing system, are under consideration.

The study of Division salaries and organization is extremely important. The Division has been steadily losing its best professional personnel to other agencies both state and federal. We are faced with making replacements in key positions without any reservoir of professional personnel on which to draw. We have found that Division salaries are below the national average for similar positions in other states and extremely far below those for similar positions in the Federal service.

The problem of acquisition of land for public recreation, fishing and hunting access is the subject of the third study. This is perhaps the most difficult of the three studies, and is just beginning to get underway. While the need for such areas is almost axiomatic, possible methods of financing their acquisition and development within the financial capabilities of the Division are not so easy to determine.

Legislation Under Consideration

Two major items for legislation are being considered for submission to the 1963-64 General Court. The first of these will be a proposal to change appropriate sections of Chapter 131 to provide authority for the Director of the Division of Fisheries and Game to appoint additional outlets for the sale of hunting, fishing, sporting and trapping licenses.

It has been determined that Massachusetts is the sole state in the nation which does not sell even one of its various classifications of sportsmen's licenses through outlets other than town and city clerks and its main office in Boston. While the town and city clerks have performed and are performing excellent service, many of them frequently arising at early hours to provide licenses, your Board believes that additional outlets will not only help relieve some of this pressure on the clerks but will also improve the public service by making

licenses more readily available, and serve also to secure some of the revenue that is now being lost through failure to accomodate the casual license buyer.

The second item concerns disposition of the game farm at Marshfield. This farm is many years old and was originally intended for the rearing of waterfowl, rather than pheasants. It is extremely limited in land area, without room for expansion or improvement. In fact it is on the main street of the town, practically in the center. Your Board believes that it is an uneconomic operation without promise for the future, and proposes to dispose of the property. The annual production of this farm and its permanent personnel can be readily absorbed elsewhere in the Division without loss and in fact at considerable savings.

The Board wishes to express its sincere appreciation to all personnel of the Division for their continued exemplary performance of duties, and wishes also to express its appreciation to the Governor, Executive Council, General Court, and to those other departments, agencies, members of public information media and the general public who have assisted and supported our programs in the past year.

Board Personnel

Mr. Roger D. Williams, Natick, was re-elected Chairman, and Mr. Bert B. Nietupski, Hampden, was re-elected Secretary, at the meeting on March 21, 1963, at Westboro Field Headquarters.

The term of Mr. Harper L. Gerry, Shelburne Falls, expired October 6, 1962.

Mr. Harry C. Darling, East Bridgewater, was appointed to the Board by Governor Volpe on December 13, 1962.

Respectfully submitted,

S/Roger D. Williams, Chairman

Bert B. Nietupski, Secretary

F. Stanley Mikelk

Harry C. Darling

The bulk of the game research and management program is financed 75 percent by Federal Aid Funds (Pittman- Robertson). Propagation and other management activities are financed entirely by state funds.

Federal Aid Projects

W-9-D Statewide Development Project

This project is devoted to the development of our wildlife management areas. The program was similar to that of past years with emphasis on making the areas accessible to the hunter, encouraging reproduction of native game species and providing suitable sites for stocking our game farm pheasants and quail. This is our biggest project and occupies our district game management crews for about 60 percent of their time. Specific activities, well reported in previous years, were divided between maintenance of established buildings, bridges, roads, signs, etc. and the development of the land area itself.

Multiple use of these areas has been encouraged during periods of the year other than the hunting season. Field trials were held both for bird and rabbit dogs. Target ranges have been established on some areas and shooting is allowed by permit. Camping has not been encouraged but large groups of Boy Scouts have been accommodated for Council Camporees. More and more thought is being given to multiple use where it will not interfere with the original intent of the areas.

W-35-R Game Population Trend and Harvest Survey

Statewide Game Harvest: Fifteen hundred postal cards representing 1.3 percent of licensed hunters were sent out to determine the kill of small game and deer. There was a 79.0 percent return of questionnaires. Data were expanded to include the total estimated hunters. Each report equals 98.0 hunters.

The majority (65.9%) of licensees contacted did hunt and 70 percent were successful.

The kill of pheasants, grouse, quail, white hare, cottontail rabbit, raccoon, gray squirrel, and black ducks declined from 1960. The kill of woodcock and other ducks increased.

In regard to hunting pressure (preference), pheasants were first, followed by grouse, cottontail rabbit, white hare, gray squirrel, woodcock, other ducks, black duck, quail and raccoon.

For hunter success, those taking raccoon were first, followed in order by cottontail rabbit, gray squirrel, pheasant, black duck, grouse, white hare, woodcock, other duck, and quail.

A majority (69.5%) of gunners reported hunting only on private lands, while 8.8 percent hunted only state management areas and 21.7 percent hunted both.

The expanded sample indicated that there were 52,038 deer hunters who reported a mean kill of .0753 or total calculated kill of 3,918 deer. The reported kill directly after the season was 2,538 which is about 65 percent of the calculated figure. In the past, it has been estimated that the reported kill was only about 60 percent of the actual kill. The calculated figure (3,918), therefore, may be very close to the true kill.

Statewide Deer Harvest: The 1962 reported deer kill figure (2,538) was 34 percent less than a ten-year average figure (3,871). A total of 2,538 deer was reported taken by hunters. Of these, 1,269 were males and 1,264 were females, plus 5 which were reported with no sex indicated. The even sex ratio of 1.0 males to 1.0 females has been a constant figure for 15 years. The gunners accounted for 2,516 whitetails while the archers collected 22 deer. The reason for the reduced kill figure for 1962 was not determined. Kill figures for ten towns surrounding the 100,000 acre Quabbin watershed showed that this area has little influence on the statewide deer kill.

Mortality data compiled for a ten-year period (1953 to 1962) for deer killed by means other than hunting show that an average of 587 deer are removed annually from the herd. Of the 587 deer, an average of 376 (64%) are killed by cars, 99 (17%) are killed by dogs, and 112 (19%) are disposed of by drowning, illegal kill, injury, etc.

Deer Herd Composition: During the 1962 (shotgun) season, a total of 657 deer were processed at the deer checking stations. These deer represent a 26 percent sample of the 2,538 deer reported killed. A decline of 546 deer was noted from the 1961 kill figure of 3,084 deer.

A summary of age data shows the deer kill was composed of 28 percent fawns, 25 percent in the 1-1/2 year class, 19 percent in the 2-1/2 year class, 14 percent in the 3-1/2 year class and the remaining 14 percent in the 4-1/2 and older classes. This is comparable to the harvest of previous years.

An average male fawn weighed 83 pounds while the average 3-½ year old male weighed 183 pounds. The weight of bucks increases roughly 40 to 50 pounds per year up to age 3-½ years. Eight to ten pounds are added annually by males from 3-½ to 5-½ years. The average 5-½ year old male weighs 200 pounds.

Female fawn weights averaged 78 pounds. The does showed the greatest weight gain during the first year, adding roughly 40 pounds and weighing 117 pounds at 1-½ years old. Weight gains in subsequent years are relatively slow, averaging about three pounds per year. The average 5-½ year (and older) female weighed 146 pounds.

Shotgun and ammunition size data showed that 69 percent of the successful hunters used a 12-gauge gun; 26 percent of the hunters used a 16-gauge; the 20-gauge gun was used by 4.5 percent; and .5 percent used .410, 28 and 10-gauge guns.

Fifty-four percent of the hunters used slugs to kill their deer. Those using buckshot amounted to 26 percent and 20 percent used both slugs and buckshot.

Waterfowl Census: The total 1963 waterfowl count was down 13 percent from 1962. Black ducks were down 18 percent. All puddle ducks were down 17 percent. Scoters, eiders and old squaws were down 7 percent. Other diving ducks were down 17 percent. Canada geese were down 20 percent. In every case, except baldpate and scaup, the 1963 count was above the nine-year average figure (1955-1963).

Mourning Dove Census: The 1962 spring call count produced a breeding index of 11. There was an average of 5.4 doves heard per route. The 1961 index was 9 with an average of 4.3 doves per route.

The fall count resulted in fewer birds seen than in 1961 when the figures were disappointingly low. The maximum number seen on any management area was 400 and the majority of observations were less than 100. Counts on private land produced even fewer than on management areas.

Wood Duck Nesting Success and Brood Survival: During January of 1962, all of the old nesting boxes at Great Meadows Refuge were removed and 100 new boxes erected at previously marked sites throughout the marsh. Despite this refurbishment of the boxes, the nesting usage failed to show any improvement this year. Out of 97 boxes available, there were 43 nesting attempts of which 32 were successful, producing 322 ducklings. On the statewide sample check, the usage was 35 percent compared to 37 percent in 1961 and 54 percent average for a seven-year period prior to 1961.

A trapping and banding program was carried out at Great Meadows National Wildlife Refuge during the month of September 1962. A total of 144 individual wood ducks were captured. The trapped sample consisted of 46 immatures and 98 adults. This is the most dismal juvenile to adult ratio ever encountered at Great Meadows and is symptomatic of the declining population.

Samples were taken at Great Meadows Refuge for spectrophotometry analysis to determine if insecticide residues were present. Five wood ducks, ten soil samples, a golden shiner and a bullfrog were collected. The ducks and frog tested were negative but the golden shiner showed 14.2 p.p.m. of DDT. The soil samples have not yet been analyzed.

Experimental Turkey Stocking: A wild turkey restoration experiment was instituted in Massachusetts in 1960 with the objective of determining if a huntable population could be established. Twenty-two wild turkeys were released in Quabbin Reservation, central Massachusetts, during 1960 and 1961. Reproduction in 1961 resulted in 48 poults surviving until September 1961 when the total population was estimated to number 62 turkeys. Only 17 turkeys could be located in the spring of 1962. Reproduction in 1962 amounted to 34 poults surviving until September 1962 when the total population was estimated to be 50 turkeys. Fifteen turkeys could be located in the spring of 1963.

Twelve wild turkeys were on Mount Washington in the spring of 1962. Over 20 poults hatched during the summer. Fifteen turkeys were moved to October Mountain State Forest during the summer of 1962. Twelve turkeys remained in the spring of 1963.

No more than five turkeys were in October Mountain State Forest in the spring of 1962. Seventeen additional turkeys were released during the summer of 1962. Two to seven turkeys remained in the spring of 1963.

Sixteen turkeys released near Otis, Massachusetts in the fall of 1961 evidently failed to establish a population.

Utilization of Public Hunting Grounds: Hunter usage on eleven areas was estimated at 50,000 man days in 1962 which is a 7 percent increase over 1961. On ten areas which are comparable, usage in 1962 was up 21 percent over 1960 and up 30 percent over 1959. The majority of hunters came from within a 20-mile radius of the management areas. Hunting pressure during the week was noticeably heavier on days after areas were stocked. A check of multiple use from April to October showed considerable usage falling into 29 different categories. None of these

uses interferes with the original intent of the area and does not increase the work load of project personnel.

Activities Sponsored Entirely by State Funds

Stocking: Surplus pheasant and quail brood stock was released in May and June. Cocks and hens of the year were stocked at twelve weeks of age in August. Adult cocks were released the week before and during the upland season on private lands open to hunting. Cock pheasants and quail of both sexes were released throughout the season on wildlife management areas.

In connection with the Sportsmen's Club Pheasant Rearing Program, district personnel inspected club rearing pens and delivered pheasants to the 50 clubs participating.

White hare were released after the season throughout the state to supplement brood stock.

White Hare Study: Tag returns of 2,442 imported hare liberated during 1962-63 in Massachusetts covers were tabulated. Only 60 tags were returned which represents a 2.4 percent return on a state-wide basis.

From the small sample of tag returns (25) it was possible to show that 14 or 56 percent of the liberated hare moved two or more miles from the release sites and generally in a northerly direction. Eleven or 44 percent were shot within two miles of the release site.

A box trap census and hunter survey indicated that native hare had a 41 percent survival from 1962 to 1963 contrasted with a three percent survival for imported hare.

After the close of the 1963 hare hunting season on February 5, 2,215 tagged hare were liberated. Of these, 1,199 were conditioned or held on the game farms for an average of 22 days. The remaining 1,016 were released on the date of arrival. To date, conditioning of hare has been an added expense and has not yet proven to be beneficial to survival.

Two in-season experimental releases (1962-1963) of 30 hare each have shown that hunters do not shoot out a hare population.

The Division plans to stock hare in 1964.

Damage Complaints: District personnel handled an increasing number of beaver complaints from both town officials and individuals. Complaints were solved by trapping and transplanting, issuing permits to destroy or destroying by dynamiting.

Rabbit damage complaints were answered by supplying live traps and transplanting those taken. Advice was offered to many on how to cope with this frequent problem.

Checking Stations: Five beaver pelt checking stations were maintained for two days at the close of the trapping season. A total of 589 pelts was examined.

Surveys: Three woodcock consus routes were run to determine the spring breeding index. Woodcock wing envelopes were distributed to hunters for the collections of wings from fall-shot birds.

Field Trials: Improvements were made and assistance given for running trials on the Westboro and Crane Wildlife Management Areas.

Community Conservation Planning: Considerable information and assistance was given to professional town planners and town conservation commissions and school groups. Many interagency conferences were attended to assist cooperative programs with the Soil Conservation Service, Corps of Army Engineers and the United States Fish and Wildlife Service.

Game Bird Propagation: Of major importance was the severe weather conditions during the month of February which caused extensive damage to our game farms, especially at the Wilbraham Game Farm where heavy, wet snow destroyed the majority of the covered pheasant pens. This resulted in costly repairs and replacements. Nevertheless total pheasant production for the 1963 season will not suffer.

The last fiscal year showed an all-time high release of 62,217 cock pheasants and 14,456 hen pheasants.

Much progress has been made in converting many old oil brooders to modern gas brooders. In an effort to improve the hatchability and liveability of our present brood stock, new bloodlines were introduced through the cooperation of the New Jersey Division of Fish and Game. It should be noted that this is an experiment in an effort to improve, if possible, our present ringneck pheasant strain.

During this period, white hare were again held at three of the game farms for conditioning prior to release.

Other routine maintenance was conducted.

GAME DISTRIBUTION

July 1, 1962 - June 30, 1963

Pheasants		Hens	Cocks	Total
Adults:	Spring and summer liberations	6,337	852	7,189
Young:	August liberations (12 week olds)	7,180	9,241	16,421
	October-November liberations (17-25 week olds)	275	45,260	45,535
	Sportsmen's Club Rearing Program	664	6,864	7,528
Totals:		14,456	62,217	76,673

Quail		Coturnix	Bobwhite	Total
Adults:	Spring and summer liberations	497	350	847
Young:	October-November liberations	0	3,225	3,225
Totals:		497	3,575	4,072

White Hare	
Northern varying, purchased	2,500

FISHERIES PROGRAM

During the 1963 fiscal year the evaluation of fisheries management practices was continued. A significant amount of time was spent on testing new techniques and the further development of basic tools. Among these were an assessment of the practicability of aerial application of fish control chemicals, the sophistication of electrical collection gear, the refinement of field water analysis and the further testing of selective fish eradication chemicals.

The major emphasis of the fish management section was directed toward providing immediate sport fishing. The reclamation program (Table 1) was continued and trout stocking was implemented in conjunction with hatchery personnel. A study to determine areas suitable for trout both in streams and ponds was carried out by all fisheries units. During this period, 34,700 large-mouth bass were stocked in rehabilitated waters, as were 2,700 chain pickerel. These fish were procured from the Merrill Pond and Harold Parker rearing systems. Twenty-five thousand fish were restocked in the systems for the 1964 season.

In addition to the aformentioned field activities and the following described major projects, it should be noted that District personnel perform a multitude of so called "trouble-shooting" tasks that are in many ways routine and yet which are in fact of great importance in fulfilling the duties and obligations of this Division to both the resource and the sportsmen. Among these are the constant efforts on the part of field units to further the development of access areas; their contributions to keeping the sporting public informed on matters vital to their sport; the constant checking and reporting of fish kills caused by numerous factors; and many mundane maintenance and administrative tasks that preserve the efficiency of the physical plants.

Creel Census Activities:

During the last year regular fisherman interviews were continued on the eight ponds set up as an investigation unit. At Quabbin Reservoir a creel census was carried on at the three launching areas. The data for the previous year was analyzed and prepared in report form. During this period 64,000 trout fingerlings were stocked in the reservoir, as were 38,650 marked yearling brown trout, 7,400 yearling rainbows and 53,213 fingerling lake trout. This phase of the project will continue in order that the most profitable stocking rates, time and species combinations can be obtained.

Four trout ponds on Cape Cod and three warm-water ponds in central Massachusetts were subjected to a creel census during the past year, including the ice-fishing season.

Pesticide Studies:

Laboratory facilities at Westboro have been expanded to meet the growing demand for readily available analysis of polluted water, with the major emphasis on pesticides. The U. S. Department of Public Health increased its grant to the Division to $15,000.00 per year. During this past year the Massachusetts Audubon Society provided the Division with a gas chromatography laboratory for the rapid screening and identification of pesticide residues. The University of Massachusetts contributed monies and equipment, as did the New England Interstate Water Pollution Control Commission, the Connecticut River Watershed Council, the Farmington River Watershed Association, and the Westfield River Watershed Association.

Water Quality Surveys:

During this period a state-wide project aimed at determining thereasons for variable stocking success of fresh-water fishes was undertaken. There is reason to believe that this variance is related directly to the chemical characteristics of the water stocked. Since a large proportion of fisheries funds in Massachusetts are expended on stocking activities, it is important that factors which have a bearing on stocking survival be thoroughly investigated.

Copies of all technical reports concerning any phase of fisheries research projects are available through the Division.

TABLE # 1

TROUT WATERS RECLAIMED JULY 1, 1962 - JUNE 30, 1963

Pond	Town	Area in Acres
Chicopee Reservoir	Chicopee	29
Factory Hollow Pond	Amherst	8
Mill River	Amherst	---
Fearing Pond	Plymouth	24
Rocky Pond	Plymouth	20
Lout Pond	Plymouth	18
Stiles Pond	Boxford	61
Pleasant Pond	Wenham	28
Lake Massapoag *	Sharon	353

Warm-water Ponds Reclaimed

Pond	Town	Area in Acres
Lake Snipatuit	Rochester	710
Long Pond	Rochester	33
Widgeon Pond	Plymouth	24
Sassaquin Pond	New Bedford	34
Warner Pond	Hadley	68
Campus Pond	Amherst	2

* Two-story management

Trout Propagation

Trout releases from the five state fish hatcheries, including additions from the U. S. Fish and Wildlife Service, totalled 1,667,706 trout, of which Massachusetts liberated 1,493,305 trout.

The federal hatcheries at Pittsford, Vermont; Nashua, New Hampshire; Hartsville and North Attleboro, Massachusetts, released 174,401 trout to areas designated by this Division.

Lake Trout

In November, 1962, we received 200,000 lake trout eggs from the New York Conservation Department in exchange for eyed brook trout eggs. These lake trout eggs were reared at our Montague and Sunderland Hatcheries and the resulting fry were stocked in the Quabbin Reservoir.

Early Brown Trout Eggs

We obtained 518,000 early brown trout eggs which were taken from breeders kept under artificial lighting from the U. S. Fish and Wildlife Service Hatchery in Cortland, New York. The results of these early eggs will be compared with our stock for future consideration.

Water Resources

We have found it advisable to check temperatures more closely to show the water resources at each station. Graphs of daily air and water temperatures are being compiled to give us a better understanding of growth potential. As a result of the extremely cold winter, some of our hatcheries failed to obtain normal growth in the brown trout species. Lack of precipitation during spring and summer greatly reduced the supply of water, necessitating the constant use of pumps.

Trout Coloration

An experiment for brightening colors in trout was set up at the Sunderland Hatchery using canthaxanthin (a synthetic coloring material). This product had been used successfully in coloring broilers when supplemented by yellow corn and dehydrated alfalfa meal. We were able to procure ten grams of canthaxanthin in beadlet form which we had incorporated into a medium-sized pellet at a 5 mg/lb level by our feed manufacturer. Three separate lots of 3,000 each brook trout fingerlings 3-½" average length and each with independent water supplies were set up on October 18, 1962. The first group labeled A was fed canthaxanthin, group B acted as a control and group C was fed paprika at a three percent level. Our photography department took slides of fish selected at random from each group in the beginning when

the experiment was set up, and then again on January 15th, March 14th and April 1st. Production sheets were maintained to record growth as well as visible color change. It was noted that group A, containing canthaxanthin, showed a slight increase in growth over groups B and C. After six months research there was no visible color change using canthaxanthin.

Color research was continued at the Montague Hatchery using paprika containing 194 mgs. calculated total carotene per pound, incorporated into pellets at a three percent level. Observations indicate that the brown trout converted the yellows in paprika equally as well as brooks and rainbows transformed the red xanthophyll (a yellow vegetable pigment, C40H6602, occurring in grain or leaves; oxygenated derivatives of carotene hydrocarbons).

Warmwater Trout

Personnel at the Palmer Hatchery have been keeping brook trout in shallow ponds during the summer when high water temperatures prevail. These brook trout have produced excellent eggs and the resulting fry and fingerlings will be a welcome addition to the pond stocking program.

Change-Over at Sunderland

Sunderland recently completed a full year of producin only yearlings for distribution. All brood stock and two-year-olds were liberated in the spring of 1962 with the understanding that the hatchery personnel would have three years to completely sterilize the hatchery to eradicate a disease problem. This program was instituted on the advice of the U. S. Fish and Wildlife Service Disease Laboratory in Leetown, West Virginia. However, the hatchery personnel were unable to complete the sterilization program and are once again raising two-year-old of 9"+ size which will be stocked in the spring of 1964. The holding of 100,000 yearling trout which would have been liberated in the spring of 1963, and the fact that all trout were liberated in 1962 accounts for the drop in poundage from this station.

Construction

Limited construction was carried on at Montague, Palmer and Sunderland, with the bulk of funds going to Sandwich and Sutton. Six concrete raceways 80' x 10' x 3' with connecting drains were completed at Sandwich and several new wells were constructed to supply these pools. At Sutton a series of eight wooden raceways were constructed to replace the use of a big open pond to allow better hatchery management. A 10" transite sewer line was installed to divert water from upper ponds when being sterilized.

TROUT DISTRIBUTION IN MASSACHUSETTS FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1962 TO JUNE 30, 1963

BROOKS		BROWNS		RAINBOWS		
Under 6"	Over 6"	Under 6"	Over 6"	Under 6"	Over 6"	TOTAL TROUT
161,679	554,248	221,775	418,028	189,650	122,326	1,667,706

Total Trout Distributed 6-9"	753,044	
Total Trout Distributed 9" plus	167,157	
Total Federal Trout Distributed 6" plus	174,401	
Total Catchables (6" plus)		1,094,602
Total Fingerlings (6" minus)	573,104	
Grand Total		1,667,706

STATION POUNDAGE

STATION	TOTAL LBS.	
Montague	66,225	
Palmer	30,745	
Sandwich	71,194	
Sunderland	67,128	
Sutton	22,641	
State Poundage		257,933
North Attleboro	10,466	
Hartsville	11,274	
Nashua, New Hampshire	12,921	
Pittsford, Vermont	5,836	
Federal Poundage..................................		40,497
Grand Total		298,430

(This table does not show trout retained for brood stock)

LAND ACQUISITION PROGRAM

During the past year leases for the continued use of a strip of land along the three branches of the Westfield River, the Farmington and Squannacook Rivers were renewed. Where possible, new leases were obtained. There was a natural loss of leased land along the Middle Branch of the Westfield River due to the taking of land by the Federal Government for the Littleville Flood Control project.

Approximately seventy-five acres were added to the Wildlife management area known as West Meadows, located in West Bridgewater. Approximately 180 acres were added to the Peru wildlife area and a sizeable tract was added to the Phillipston area.

At the close of the year signed options for the purchase of two sizeable tracts of land were held by the Division. Both of these areas will be beneficial and important in the overall plan of the Division to provide adequate fish and wildlife management areas throughout the state.

Several other possible acquisitions were checked into, some being considered unsuitable either because of their size and the difficulties which would be encountered in adding more to the original area or because of price.

The Division is trying to operate in a highly competitive land market. If it hopes to continue to add to the areas now under its control or add new areas, more funds will have to be made available for this purpose.

The public fishing grounds program which has been in operation since 1932 has proven to be a sound and beneficial operation to the licensed fishermen of the state as well as the landowner. The landowners who have, through the years, leased their land to the Division certainly merit a well deserved thank you from all fishermen. Their compensation is small and their headaches many. Let us hope that they, in the years to come, will continue to cooperate with the Division and let us also hope that all fishermen will show their appreciation by making every effort to respect and protect the rights and property of these public spirited people.

We regret that we cannot give a glowing report of land acquisition because this Division has never received sufficient funds for this purpose. We have been able to acquire several parcels by acquisition and the use of others through agreements with other agencies, but the program is

much too far behind the increasing need. The time is long past when the Commonwealth can safely ignore the rapidly increasing demand for public recreational areas and particularly for wildlife management areas and access sites to our ponds and streams. Hunter usage of wildlife management areas, for example, increased seven percent last year and 21 percent over 1960.

An intensive study of this problem is currently underway. While the need for such areas is so obvious as to be axiomatic, possible methods of financing their acquisition and development within the financial capabilities of the Division are not so easy to determine.

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

General:

The new Natural Resources building, known as Holdsworth Hall, neared completion during the reporting period. The new facilities for research and teaching wildlife and fisheries biology probably are unexcelled in the country.

Wild Turkey Project:

A very severe winter caused considerable mortality among turkey flocks in central Massachusetts during the past year. However, surviving birds should represent the hardiest stock, and production was excellent during the spring. High survival of poults has been recorded. At least one brood was reared on October Mountain. The relatively tame flock on Mt. Washington apparently has had poor production this year.

A number of very reliable reports indicate that some turkeys in the central part of the state have dispersed to other possible ranges outside of Quabbin Reservation. Actual estimates of number can only be made after snowfall.

New England Cottontail Study:

An experimental study of the productivity of the Eastern and New England Cottontail on an island in Quabbin Reservoir is still in process. A number of each species were released during the spring and there has been production from both.

Cadwell Forest Area:

Tabulation and cost of the most efficient method of clearing areas in second-growth hardwood forest of poor quality has been carried out. Definite effect on wildlife must await further clearings and planting. This is a long-range project.

Pesticide-Wildlife Project:

Laboratory experiments feeding various doses of DDT to a captive colony of Towhees as well as intensive field collections of this species in sprayed areas have continued. Initial findings suggest that migratory passerine birds are more vulnerable to DDT in the spring than in the fall.

Chemosterilant Studies:

Dr. David K. Wetherbee and Dr. Bernard C. Wentworth have conducted basic research on the effect of chemicals, dyes, radiation and virus disease as agents to control populations of nuisance bird species. One dye proved effective in inhibiting hatching of Herring Gull eggs on Milk Island. Wetherbee's work has received national recognition, not only for initial accomplishments but because of the pioneering aspects of his research. This is entirely supported by the Bureau of Sport Fisheries and Wildlife and the Atomic Energy Commission.

Woodcock Manuscript:

The second draft of a woodcock manuscript has been edited and reviewed by a number of biologists, and a third draft is being completed for what is hoped to be a final review.

INFORMATION AND EDUCATION PROGRAM

Like modern conservation agencies in every state, the Massachusetts Division of Fisheries and Game recognizes that public understanding and support of, and participation in conservation measures are basic necessities.

As do its sister agencies in every state, this Division uses publications, news services, films, radio, television, exhibits, youth programs and personal contact to serve both the public's need for information as well as the Division's need for public understanding, cooperation and support. The program is planned and directed within the information and education section and implemented primarily through the section and the district wildlife managers. All personnel of the division are expected to participate regularly in information and education activities.

Following are enumerated activities of this program for the fiscal year ending June 30, 1963:

News Services

A total of 151 separate stories, (five more than last year) were released as follows: statewide releases from I&E-84; television news strips from I&E-16; area releases by district managers-51. In addition, almost constant contact with media representatives by I&E and district personnel resulted in a minimum of 35 feature articles outside of rod and gun columns. Assistance to free lance authors was given in the case of several national magazine articles.

Massachusetts Wildlife

Circulation of this bi-monthly free magazine showed a net gain for the reporting period of 5,443 subscribers, with a mailing list at the close of the reporting period of 42,119. Circulation growth, entirely by personal request of the individual desiring the magazine, continues at a rate of over 900 new names per issue. Additional methods of mailing list control are currently under study.

Audio-Visual Aids

I&E prepared and presented a total of 40 television programs, including 16 "Dateline Boston" half-hour shows, 30 "Critter Corner" 15 minute shows, and four special shows. The section also supplied film used on the CBS network special show "Silent Spring of Rachel Carson."

The audio-visual supervisor was the only producer of a public service program asked by channel five to lead a production session at a seminar held by channel five for public service television personnel.

A number of radio recordings and other interviews were made by various personnel.

The fifteen titles carried in the film loan library were booked a total of 741 times before 59,280 viewers. New films added during the year included "Our Wildlife Heritage" and a copy of the "Silent Spring" CBS show. Film usage this year was nearly double that of previous years, made possible by the addition of a clerk to the audio-visual office. Work was begun on a film on pheasant propagation.

Seven exhibits at sportsmen's shows and fairs were participated in by district personnel in cooperation with I&E.

Publications

The publications inventory has been deliberately exhausted, to make way for replacement in the future by a limited number of specific titles of more widespread public information value. At the close of the reporting period, work was underway on a new publication on the pheasant in Massachusetts.

The current year's Annual Report, Stocked Waters List, Fish and Game Laws Abstracts, Closed Towns List, and Migratory Game Regulations were compiled and published by I&E.

Tours and Demonstrations

The Northeast District conducted three "Show Me" trips with members of the press, a field demonstration of fisheries activities for the Massachusetts Federation of Sportsmen's Clubs, and a demonstration of electric shocking equipment for a town conservation commission and forestry commission.

The Central District took press representatives on three field trips, conducted two "show me" tours for sportsmen's officials, participated in a three-day conservation education program for 500 scouts of the Mohegan Council, demonstrated trout stocking for the Mahar Regional High School rod and gun club, and demonstrated use of hunting dogs for the Leominster Jr. Sportsmen.

The Western District made two tours with members of th
press and conducted three "show me" tours for the public.

The Southeastern District made six tours with members of the press and conducted three field demonstrations on fisheries management for sportsmen's groups and boy scouts.

I&E conducted a number of special programs for groups of high school youths and guidance counsellors in connection with career guidance.

Meetings

District personnel attended or participated in 327 meetings of sportsmen's groups, civic and fraternal organizations, youth and church groups, etc., besides numerous unrecorded meetings with individuals and various local groups to advise directly on wildlife management matters.

Both I&E personnel and others throughout the Division participated in numerous unrecorded meetings as usual.

The I&E chief served during the year as secretary-treasurer of the American Association for Conservation Information, and was elected 2nd Vice President at the annual meeting in Nebraska in June.

Conservation Education

The I&E chief continued to assist in functions of the State Advisory Committee For Conservation Education. The I&E section works closely with the supervisor of conservation education in the Department of Education.

The 14th annual session of the Massachusetts Junior Conservation Camp was conducted by I&E with the help of other Division personnel at Thompson's Pond, Spencer. A total of 123 campers were graduated. A 100-question test was devised and administered to the campers, and later administered to a control group of youth of the same age who had not attended this camp. The average scores of campers were about 20 percent higher than those of the control group, and the camper's scores ranged from 96 percent to 45 percent with the majority in the 80's.

Sportfishing Award Program

The I&E section inaugurated the Massachusetts Freshwater Sportfish Awards program with the beginning of fishing season last spring. Under this program, anglers reporting catches which equal or exceed specified size or weight minimums are awarded a bronze pin memorializing their catch. Plans are to award a special pin for the top fish in each category at the end of the calendar year. All qualifying entries become part of the official records.

Through this program, the angler receives official proof of his catch, but more important, the Division is able to establish a record of the better than average fish caught in Massachusetts. The record is useful both for management purposes and to generally promote fishing in Massachusetts. Extensive and continous publicity is given the program and its results throughout the calendar year.

Immediate reaction to the new program was evidenced, with numerous reports of surprisingly large fish coming in by the end of the reporting period. For example, a 12-pound bass and a 12-pound trout were among the reports recorded by June 30. For the first time, official records are in existence to demonstrate that Massachusetts produces fishing of a quality that requires no apologies.

Miscellaneous

I&E continued to handle all editing, printing and publishing functions for the Division.

Approximately 19,000 "Safety Zone" posters were distributed free to landowners by the districts and I&E.

Twenty towns have permitted erection of metal highway signs calling hunter's attention to the safety zone law.

June 30, 1963

GENERAL ADMINISTRATION

How The Sportsmen's Dollar Was Spent

ADMINISTRATION				
Administration	3304-01	$90,931.26		
Fish and Game Board	"	1,225.00	$92,156.26	7-1/5%
Information - Education	"	-	68,933.40	5-1/3%
FISHERIES MANAGEMENT				
Fish Hatcheries	3304-42	-	303,179.85	23-2/3%
Management	3304-42	101,078.73		
Striped Bass & Marine Fisheries Investigation	3304-46	10,678.83		
Fish Restoration Projects	3304-47*	26,225.13		
Management	3304-51	69,962.45	207,945.14	16-1/5%
WILDLIFE MANAGEMENT				
Game Farms	3304-51	-	257,877.98	20-1/10
Management	3304-51	69,962.46		
Wildlife Coop. Unit	3304-44	7,932.59		
Wildlife Restoration	3304-53*	127,072.10	204,967.15	16%
LAND ACQUISITION	3304-53*	-	2,500.00	1/5%
LAW ENFORCEMENT				
Deer Damage	3308-05*	9,328.68		
Public Hunting Grounds	3308-07	7,343.20		
Conservation Officers - Salaries & Expenses	1003-03	128,256.42	144,928.30	11-3/10
			$ 1,282,488.08	100%

*Continuing Accounts

Expenditures under:
3304-46
3304-47
3304-53
reimbursed 75% by Federal Funds.

RESERVE IN INLAND FISHERIES AND GAME FUND
AS OF JUNE 30, 1963 - $ 282,754.46

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES & GAME

Fiscal Year July 1, 1962 to June 30, 1963

ACCOUNT NO.	TITLE	APPROPRIATION	EXPENDITURES & LIABILITIES	REVERTED
3304-01	Administration	$ 161,708.	$ 161,089.66	$ 618.34
3304-42	Fisheries Management	453,400.	404,258.58	49,141.42
3304-46*	Striped Bass & Marine Fisheries Investigation	18,170.17	10,678.83	7,491.34
3304-51	Wildlife Management	418,950.	397,802.89	21,147.11
		$ 1,052,228.17	$ 973,829.96	$78,398.21

		CONTINUING APPROPRIATIONS	EXPENDITURES	BALANCE FORWARD
3304-47*	Fish Restoration Projects	$ 94,241.12	$ 26,225.13	$ 68,015.99
3304-53*	Wildlife Restoration	215,456.20	129,572.10	85,884.10
		$ 309,697.32	$ 155,797.23	$153,900.09

*75% reimbursed by Federal Funds

SUMMARY OF FISH & GAME INCOME

July 1, 1962 to June 30, 1963

Fishing, Hunting & Trapping Licenses	$ 1,179,792.34 *
Special Licenses, Trap Registration & Tags	5,412.61 **
Alien Gun Permits	94.50
Rents	3,412.00
Misc. Sales & Income	8,503.28
Pittman-Robertson Federal Aid	62,888.40
Dingell Johnson Federal Aid	37,025.51
Court Fines	5,862.00
Refunds Prior Year	44.37
Archery Stamps	4,661.60
	$ 1,307,696.61

* See Detail Sheet #1
** " " " #2

Detail Sheet No. 1

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Fiscal Year July 1, 1962 to June 30, 1963

Licenses	Price	Number	Gross Amount	Fees Retained by Clerks	Net Returned to State
Series 1, Res. Cit. Fishing	$ 4.25	110,700	$ 470,475.00	$ 27,483.25	$ 442,991.75
Series 2, Res. Cit. Hunting	$ 4.25	75,148	319,379.00	18,674.25	300,704.75
Series 3, Res. Cit. Sporting	$ 7.25	39,637	287,368.25	9,847.50	277,520.75
Series 4, Res. Cit. Minor Fishing	$ 2.25	20,154	45,346.50	5,015.25	40,331.25
Series 4A, Res. Cit. Female Fishing	$ 3.25	18,106	58,844.50	4,492.25	54,352.25
Series 5, Res. Cit. Minor Trapping	$ 2.25	232	522.00	58.00	464.00
Series 6, Res. Cit. Trapping	$ 7.75	576	4,464.50	139.75	4,324.75
Series 7, Non-Res. 7-day Fishing	$ 4.25	2,229	9,473.25	552.25	8,921.00
Series 9, Non-Res. Fishing	$ 8.75	2,337	20,448.75	572.25	19,876.50
Series 9, Alien Fishing	$ 8.75	404	3,535.00	101.00	3,434.00
Series 10, Non-Res. Hunting	$15.25	1,752	26,718.00	401.50	26,316.50
Series 12, Duplicate Licenses	$ .50	3,136	1,568.00	.00	1,568.00
Series 15, Res. Cit. Sporting	Free	16,365	--------	------	--------
Series 17, Res. Cit. Old Age Assistance, Paraplegic, and to the Blind	Free	339	--------	------	--------
		291,115	$1,248,142.75	$ 67,337.25	$1,180,805.50
Sutton check returned insufficient funds					404.00
Refunds to City and Town Clerks for the year 1962					607.00
Protest					2.16
					$1,179,792.34

DETAIL SHEET #2

ANALYSIS OF SPECIAL LICENSES ISSUED UNDER SECTIONS 48, 68A, 102-3-4-5-6-7 and 112-A, Chapter 131, G. L. during the FISCAL YEAR ENDED JUNE 30, 1963

TYPE OF LICENSE	NUMBER ISSUED	RECEIPTS
Trap Registrations:		
Initial	106	
Renewal	682	$ 276.50
Fur Buyers:		
Resident	27	270.00
Taxidermists:	59	295.00
Propagators:		
(Special Fish)		
Initial	13	
Renewal	197	223.00
(Fish)		
Initial	14	
Renewal	81	313.00
(Birds & Mammals)		
Initial	64	
Renewal	305	1,235.00
(Dealers)		
Initial	1	
Renewal	82	
Additional	386	
Duplicate	1	637.50
(Ind. Bird or Mammal)		
Initial	21	
Renewal	53	47.50
Shiners for Bait:	246	1,230.00
Field Trial Licenses:	7	70.00
Quail for Training Dogs:		
Initial	11	160.00
Renewal	35	
Tags:		
Game	2,498	
Fish	17,846	
Commercial Shooting Preserve Tags	1,550	
" " " Posters	485	405.11
Commercial Shooting Preserves:	5	250.00
	TOTAL:	$5,412.61

LEGISLATION PASSED

The following laws directly affecting the Division of Fisheries and Game were enacted during the legislative session of 1963.

CHAPTER 346, ACTS, 1963: An act relative to the placing of poison for the purpose of killing certain mammals and birds.

CHAPTER 381, ACTS, 1963: An act providing that permits issued by the Director of the Division of Fisheries and Game for commercial shooting preserves shall expire annually.

CHAPTER 291, ACTS, 1963: An act relative to the molesting, attacking or killing of deer by dogs in Hampshire County and the towns of Hardwick, Barre, Petersham and Athol in Worcester County.

CHAPTER 102, ACTS, 1963: An act providing that the Director of the Division of Fisheries and Game be a member, ex officio, of the Pesticide Board in the Department of Public Health.

CHAPTER 107, ACTS, 1963: An act relative to the possession of certain firearms in motor boats.

CHAPTER 509, ACTS, 1963: An act directing the Director of the Division of Fisheries and Game to prepare plans and specifications for a Fish Hatchery at the Quabbin Reservoir.

CHAPTER 458, ACTS, 1963: An act authorizing the Director of the Division of Fisheries and Game to take by eminent domain certain land in the town of Petersham and Phillipston.

LEGISLATION UNDER CONSIDERATION

Under consideration for submission to the next General Court is an enabling act to provide for authority for the Director to appoint additional outlets for the sale of hunting, fishing, sporting and trapping licenses. Massachusetts is the only state in the nation which does not sell any of its licenses through outlets other than town and city clerks and its main office. It is believed that establishing additional outlets will improve the public service by making licenses easier to purchase, by easing the burden on present outlets, and by a potential increase in revenue.

Also under consideration is an enabling act to provide for disposal of the Marshfield game farm at the highest possible financial return to the Division of Fisheries and Game. This farm will be closed in the fall. It is no longer in a favorable location for the distribution of its product, and being small and restricted by lack of land for expansion and by reason of being in the town center, it no longer is considered an economic operation. Production and permanent personnel of the farm will be absorbed by other installations.

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1963, AND SUMMARY OF OUTSTANDING REGULATIONS.

August 4, 1948. Rules and regulations for the artificial propagation and maintenance of fish.

August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.

July 14, 1952. Rules and regulations for hunting with bows and arrows.

August 12, 1953. Rules and regulations governing sale of protected fresh water fish by licensed dealers in Massachusetts.

March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts, effective April 9, 1954.

January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.

April 3, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire, effective April 10, 1956.

February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.

February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.

October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.

September 10, 1960. Interstate fishing regulations on Wallum Lake.

September 10, 1960. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.

December 23, 1961. Rules and regulations regarding Lake Garfield in the town of Monterey.

April 16, 1962. Rules and regulations relating to the taking of certain fish in Massachusetts.

May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the commonwealth.

August 24, 1962. Migratory game bird regulations 1962-1963.

October 1, 1962. Rules and regulations relating to hunting of pheasants, quail, and ruffed grouse in Massachusetts.

January 1, 1963. Rules and regulations relating to the hunting of deer in Massachusetts.

January 1, 1963. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.

June 1, 1963. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts

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ANNUAL
REPORT

MASSACHUSETTS DIVISION
OF
FISHERIES AND GAME

1964

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James M. Shepard, Director
73 Tremont Street
Boston, Massachusetts

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The Commonwealth of Massachusetts

Division of Fisheries and Game

73 Tremont Street, Boston 8

His Excellency, Endicott Peabody, Governor
of the Commonwealth, the Executive Council,
the General Court, and the Board of the
Division of Fisheries and Game.

Sirs:

STATE LIBRARY MASSACHUSETTS

I have the honor to submit herewith the Ninety-ninth Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1963 to June 30, 1964.

Respectfully submitted,

James M. Shepard

JAMES M. SHEPARD

DIRECTOR

THE BOARD REPORTS

The last fiscal year has been marked by a number of events of great significance to the future of hunting and fishing in Massachusetts, indeed to the whole future of our wildlife resources.

Perhaps most significant both immediately and in years to come was the Board's decision to sponsor a greatly accelerated program of land acquisition. Recognizing that wildlife habitat in Massachusetts is rapidly diminishing in the face of onrushing suburbia and its attendant housing developments, industrial expansion and creation of new highways, the Board voted at its January, 1964 meeting to adopt a program of wildlife land acquisition.

Under this program, citizens who benefit by preservation of wild areas and enhancement of our wildlife populations, but who do not buy hunting or fishing licenses, would contribute at least indirectly to the program, while hunters, fishermen, and trappers would contribute directly. This will be achieved by establishing a continuing fund, earmarked solely for land acquisition, approximately one-half of which would come from the Commonwealth's General Fund and the remainder from an additional fee of $1.00 on all hunting, fishing, and trapping licenses. This legislation is being entered in the 1965-1966 legislature, and deserves your support, if you value the wildlife resources of Massachusetts.

Another significant piece of legislation proposed this year, and also entered in the coming legislature, is the bill to authorize appointment of additional license sales agents. At present, Massachusetts is the only state in the Nation which does not sell even one type of sportsman's license through commercial outlets. All other states sell one or more types through places such as sporting good stores, service stations, etc., but Massachusetts still restricts sales to only the Division's Boston office and the offices of city and town clerks. It is believed that this enabling legislation will reap considerable benefits both in revenue to the Division, and in tourist expenditures accruing to the economy of the Commonwealth.

Sportsmen themselves are showing an increased sense of responsibility for land acquisition activities. Of particular note was receipt by the Division this year of the deed to the Squannacook River land, being purchased by the Middlesex County League of Sportsmen's Clubs using donations from hundreds of individuals. The Board commends the Middlesex County League for this most unselfish and forward-looking action, and expresses its appreciation to all who have contributed to the project in any way.

The Division received international recognition during the year, when several of its information and education materials placed highest in overall competition among the states and Canadian provinces.

Significant help to needed construction and habitat improvement activities was received through the federal Accelerated Public Works program. Using federal funds, habitat work was done on the Downfall area, Myles Standish area and in the Fall River-Freetown state forest wildlife management area. Construction of needed facilities was accomplished at the Wilbraham game farm and at the Andover rearing system, and a water control structure was constructed on the West Meadows area.

Long range planning documents were completed for both the fisheries and game programs, preparatory to qualifying for additional federal recreation funds in the future. A most significant point made by both these studies is the fact that the population of Massachusetts may be expected to double within the lifetime of many of us. This can only mean increased demand for outdoor recreation, with fewer available land and water areas to produce the wildlife which is at the very core of most outdoor recreation. This poses the urgent necessity for aggressive, effective programs now, such as that proposed for the wildlife land acquisition account. As a step in this direction, the Board authorized establishment of a new Realty Section this year utilizing personnel and equipment already in existence, and thus bringing into one office all the records and responsibility for the vital land program.

Another excessively dry year is now behind us, and this year was no exception in that district crews and hatchery trucks were heavily involved in assisting fire personnel in prevention and suppression of forest fires. The problem of water supplies at several of our hatcheries was particularly acute, and demonstrates the need for additional land acquisition to protect watersheds, continuance on development of the proposed Quabbin fish hatchery, and other measures to insure future production of fish for Massachusetts' more than half-a-million anglers.

Despite their difficulties, hatchery personnel produced a record total of 1,679,620 trout of all three species, with 1,047,045 of them in excess of six inches.

This year for the first time, all fish released from state hatcheries possessed "wild" coloration, achieved through special additives to the hatchery diet. This one factor reflected most creditably upon our propagation personnel's foresight and imagination in turning out a most attractive product.

Pheasant production at our four game farms was again high, 69,905 birds being released, of which 58,570 are legal cocks. Game farm personnel have performed most creditably in producing large, well-feathered, hard-flying birds, in numbers not even speculated upon a few years ago.

The hunting safety record in Massachusetts is constantly improving. The reporting period completed our second hunting season without a single accident involving a hunter either being mistaken for game or from being unseen in the line of fire. This fine record can be attributed directly to the wearing of fluorescent orange, a development for which

Massachusetts can take full credit.

Pesticides and pollution are continual problems under study by your Division of Fisheries and Game. A total of 2,148 samples were processed in the pesticides laboratory at Westboro, in a process greatly speeded up by special equipment donated through the Massachusetts Audubon Society. Personnel have also been actively working with the Department of Public Health in classification of streams and other factors involving pollution.

Director Francis W. Sargent resigned effective December 30, 1963 to accept appointment as Associate Commissioner of the Department of Public Works. The sportsmen of Massachusetts and this Board owe a debt of gratitude to Mr. Sargent for his outstanding record during the short time he was with us as Director. On January 6, 1964, former wildlife district manager James M. Shepard was appointed as director. Mr. Shepard is a career veteran of the Division of Fisheries and Game with 14 years' service, and the Board feels extremely fortunate that it was not only able to appoint a man so eminently qualified, but also that he should come from the ranks of outstanding division employees.

The board accepted with regret the resignation of Allan S. Kennedy, Superintendent of the Bureau of Wildlife Research and Management, on June 30, 1964.

Roger D. Williams, Natick, was re-elected Chairman of the Board, and Harry C. Darling, East Bridgewater, was elected Secretary at the meeting on March 31, 1964, at Westboro. Lawrence Barbieri, Great Barrington, resigned due to pressure of business activities on July 24, 1963, and Edward Tierney of Pittsfield was appointed to fill his unexpired term on May 21, 1964. Martin Burns of Newbury was appointed by Governor Peabody on November 27, 1963.

The board of the Division of Fisheries and Game expresses its sincere appreciation to all personnel of the division for their continued exemplary performance of duties, and wishes also to express its appreciation to the Governor, Executive Council, General Court, and to those other departments, agencies, members of public information media and the general public who have assisted and supported our programs in the past year.

Respectfully submitted;

Roger D. Williams, Chairman
Harry C. Darling, Secretary
F. Stanley Mikelk
Martin Burns
Edward J. Tierney

INFORMATION AND EDUCATION PROGRAM

The Division of Fisheries and Game has long recognized that it can manage the wildlife resource of the Commonwealth for the good of all the people, and of the resource itself, only as effectively as the people themselves understand and appreciate the need for sound management, and in proportion to the degree of public confidence inspired by the Division.

Such understanding and support depends to a large degree upon an effective information and education program, such as that conducted by every state fish and game agency in the United States. While the program in Massachusetts is relatively small in terms of staff and budget, it annually produces informational and educational materials of quality and quantity comparable to that coming out of many other states with much larger operations. During the past fiscal year, the information and education program of the Massachusetts Division of Fisheries and Game scored highest of any entry in international competition for awards judged by professionals in the public relations, education, publishing, news services and audio-visual fields. Two first places and one second place in annual competition conducted by the American Association for Conservation Information were received.

The purpose of the program is to develop and maintain a state of public concern and effective action on behalf of all natural resources, with emphasis on those resources affecting wildlife. The commonly accepted public information media are used, plus youth education programs in cooperation with educational agencies.

While many time-consuming activities of the section cannot be numerically reported (the I&E section has the busiest telephone of any unit at field headquarters) certain activities can be numerically evaluated.

Among these is the processing of mail. A one-year tabulation revealed that the I&E section produced over twice as much first class mail, exclusive of news releases and magazine mailings, as the other two staff sections at field headquarters added together. The volume of other classes was also proportionately higher. This is only natural, as most public inquiries are directed to the information office.

In addition, information and education policy recognizes that certain informational activities must be and are conducted on either a formal or an informal basis by most other units. The major units other than I&E engaged in I&E work are the four wildlife districts, although their efforts mainly take the direction of personal contact, working with organizations, press contacts, tours, giving technical advice and similar activities which usually defy accurate tabulation.

Following are enumerated activities of this program for the fiscal year ending June 30, 1964.

News Services

A total of 161 separate news stories were processed and distributed to all media as follows: I&E Section news releases - 97; I&E Section television news films - 28; and area news releases by district managers - 36.

Continual contact with press representatives (170 such contacts were reported by the districts alone; I&E keeps no records since such contacts are almost daily), resulted in more than 50 special columns and feature articles. Assistance to free lance writers was given in connection with several national magazine articles.

An outstanding article, written by the I&E chief, was published in a national magazine circulated to members of the National Federation of Women's Clubs. This article presented the case for hunting as an important part of the total wildlife conservation picture, stressed the unique financial contribution of the nation's hunters to wildlife conservation, and pointed out the fact that sound wildlife conservation depends upon continued, properly managed hunting. To our knowledge this is the first time that a national women's publication has carried a pro-hunting article.

Photos were furnished to media on a number of occasions.

Evaluation of News Clippings

A count of news clippings received for the year shows that receipts increased 1,118 for a total for the 1964 fiscal year of 3,800 individual clippings. This is well above average returns.

This is a raw count of individual clippings without regard for placement or size. The practice of evaluating in terms of column inches is valueless, since a paragraph with the right message is worth infinitely more than a column of indifferent material. Further, it bears only a slight relationship to the number of news releases issued. The total of 3,800 during the year was achieved with 133 stories issued (161 less 28 TV films), while the previous year's total of 2,682 was gained with 135 stories issued (151 less 16 TV films).

What the division does in its programs, which creates news, has more effect than anything else on publicity received. During the reporting period there was a change of directors, adoption of a new land acquisition program, a new fishing promotion program, and a number of newsworthy special events, and the results are evident in increased usage of releases plus publicity not directly received from releases.

However, I&E increased its effort, releasing 97 stories and 28 TV news strips as compared to last year's 84 stories and 16 TV news strips, while districts decreased from 51 stories in the 1963 fiscal year to 36 for this reporting period. Plans are under way to conduct an inservice newswriting course for district managers and certain other personnel in an attempt to improve this part of the program. However, it should be noted that much of the publicity achieved by districts is accomplished by personal contact with the press rather than by formal releases.

Massachusetts Wildlife Magazine

Subscriptions for this bi-monthly magazine stood at 48,344 as of the end of the fiscal year, a net gain of 4,909 for the year. The net gain reflects list-cleaning operations routinely conducted during the year. Since 2,962 undeliverable names were pulled, this means that 7,871 new subscribers applied for the magazine during the year.

During the year a study of methods of mailing list control was conducted, with reference to the various methods available, costs, and probable affect on subscriptions. The experience of other states and commercial publishers with similar subscription growth problems and attendant financial conditions plus consideration for personnel work loads indicates that the most applicable system for Massachusetts might well be to adopt a periodic subscription, to be renewed after a definite period of time. This should effect a continual process of cleaning of the mailing list with minimum deleterious effects on the budget and personnel requirements, and is currently under active consideration. In the meantime, the routine process of removing from the mailing list all names for which an undelivered copy has been returned by the post office will continue.

Audio-Visual Aids

The I&E section prepared and presented 18 "Dateline Boston" half-hour television programs and 14 "Critter Corner" 15-minute programs, and participated in five "Western Massachusetts Highlights" programs during the year.

A new film, "Their Heritage", was completed during the year. This film depicts the benefits derived from wildlife management areas by the general public.

A number of radio recordings were made with various stations by I&E personnel, and the districts reported participating in six programs.

The 16 film titles carried in the film loan library were booked a total of 742 times before 59,360 viewers.

Seven exhibits at sportsmen's shows and fairs were participated in by district personnel in cooperation with the I&E section.

Hundreds of management photos were processed for the technical staff.

Publications

Three new publications were added to the stock maintained for public distribution. These included "The Pheasant in Massachusetts", an updated edition of the "Wildlife Management Area Guide", and a brochure promoting the land acquisition program, entitled "Their Heritage". This last item was designed as a companion piece for the film of the same title.

Work was begun on instituting an entirely new system of indexing and stocking the publication library, to greatly facilitate servicing of requests for information. It is now possible for a clerk to find, out of hundreds of titles, all publications, magazine articles or other bulletins on any one subject in a matter of seconds, thus speeding up the process and greatly simplifying the work load.

The annual routine publications including the annual report, stocked waters list, fish and game laws abstracts, closed towns list, and others were compiled, published and distributed by I&E. As usual, I&E was wholly responsible for much of the writing or rewriting, editing, processing through printing, and distribution of all popular publications.

Fishing, Hunting and Trapping Licenses

The I&E section completed an exhaustive study of license design, procedures and sales methods during the year. While many recommendations involving public relations, IBM methods, etc., were made, the immediate effect of this study was a newly designed license, which resulted in a savings in printing costs of $8,687 for the first year alone.

In actual use, certain minor deficiencies in the design became apparent, and work was done on correcting these for next year's licenses.

Another major recommendation of the study was that the director should be authorized to appoint license sales agents in addition to city and town clerks, and legislation was entered to accomplish this. Failing of passage, it will be entered again in the next legislature, with certain ramifications to make it more acceptable to the city and town clerks. It was found in the study that Massachusetts is the only state in the Nation which does not sell any type of sportsman's license whatsoever through outlets such as sporting goods stores, and

that such a move should greatly improve public service as well as enhance revenue to the Commonwealth both in operating funds for the division and in the form of tourist expenditures accruing to the economy of Massachusetts.

I&E routinely handles distribution of the plastic license holders to city and town clerks, with the assistance of field headquarters maintenance personnel. During the year, a new system of determining the size of shipments was initiated by the simple method of requiring clerks to order the specific number they might need for the next year. A survey found that about half the towns had more than one year's supply on hand, while a few never received enough under the system used by the office formerly handling this job. The new system resulted in a savings of about $3000 this year, as fewer supplies had to be ordered.

Conservation Education

The Massachusetts Junior Conservation completed its 15th year with 138 boys completing the course in Spencer. Under supervision of the I&E chief for the past four years, the camp has grown in popularity, evidenced by the waiting list that grows every year. This year the camp was filled in January, six months before it was scheduled to run.

During the year the I&E chief received evidence of interest in financing building of an entirely new facility expressly designed for the camp. As a consequence, considerable time was spent in selection of a potential site and designing both building and site requirements. A portfolio setting forth all requirements including design of buildings and other facilities, complete costs and other data, was completed, and is currently under consideration by those interested.

The I&E chief was active throughout the year in cooperating with the Department of Education, participating in both the Massachusetts Advisory Committee for Conservation Education, and the Conservation Education Editorial Board. He was appointed to these by the State Board of Education.

Sportfish Awards Program

The first full year of the sportfish awards program was completed at the midpoint in the reporting period, with the following State Fishing Records established:

Yellow Perch--------16¼ inches

Calico--------------16½ inches

Walleye-------------5 lbs. 4 oz.

White Perch---------16 inches

Brook Trout---------19 inches

Largemouth Bass-----12 lbs. 1 oz.

Chain Pickerel------ 6 lbs.

Bullhead----------22½ inches

Lake Trout--------13 lbs. 1 oz.

Brown Trout-------16 lbs. 12 oz.

Catfish-----------25 3/4 inches

Rainbow Trout-----6 lbs. 13 oz.

Smallmouth Bass---6 lbs. 6 oz.

Bluegill----------10½ inches

All winners were presented gold pins and plaques at the annual banquet of the New England Outdoor Writers' Association in January. This program is definitely proving its worth as a means of changing the image of Massachusetts to that of a true "fishing state". Benefits in terms of public relations, license revenue, and general promotion of fishing are already accruing.

Meetings

District personnel attended or participated in 330 meetings of sportsmen's groups, civic and fraternal organizations, youth and church groups, etc., besides numerous unrecorded meetings with individuals and various local groups to advise directly on wildlife management matters. A study by the University of Massachusetts of town conservation commissions revealed that the Division of Fisheries and Game led all other states and federal agencies in the number of instances of cooperation with the commissions. Both I&E and others throughout the division participated in numerous meetings with organizations as usual.

The I&E chief serves currently as First Vice President of the American Association for Conservation Information, having being elected to this office at the annual conference in Texas last June, and also serves as the professional association's newsletter editor.

Public Relations Programming

More effective use of information and education means has been evident during the past year, with better coordination of efforts throughout the Division, in joint efforts to establish worthwhile conservation programs. A case in point is the effort launched at the year's mid-point to establish a Wildlife Land Acquisition Fund, in which every conceivable media and method is being used to obtain public understanding and support. Beginning with public meetings with key groups last January and later meetings, tie-ins with National Wildlife Week releases, letters to key individuals, production of the "Their Heritage" film and brochure as a tie-in specifically directed

to urban populations, magazine articles, staff meetings to acquaint all personnel with the program, use of releases and public appearances at every opportunity, TV programs and other measures strategically planned and executed, the program should be a classic example of wise use of information and education to achieve a desirable purpose.

Tours and Demonstrations

The western wildlife district conducted two tours of district activities for rod and gun clubs, and two tours for groups from summer camps.

The central wildlife district conducted two tours, one of the Swift River property for delegates of the state council and county league of sportsmen's clubs, and another of a wildlife management area for representatives of the Audubon Society and groups of high school students.

The northeast wildlife district conducted groups of sportsmen on tours of the Newbury Wildlife Management Area, and demonstrated the electric fish shocking boat to a group at the Harold Parker bass ponds.

The southeast wildlife district conducted five demonstrations of activities in that district for public groups.

Internal Communications

As a means of informing all employees of current major activities and items of importance, the publication of "TOPICS" was continued. Six issues were published, in this the first full year of publication. "TOPICS" was begun in the previous reporting period.

The annual Division-wide employee's workshop was conducted in February with all sections cooperating.

These two methods of keeping all employees informed and enabling an exchange of ideas throughout the Division, plus other improvements in the routine daily channeling of reports and other information throughout the Division, have contributed considerably to morale and effectiveness.

Special Events

Special events were utilized by the I&E section on several occasions. In May, opening ceremonies for the first public access site established by the New Public Access Board were conducted in cooperation with the central district.

Through January, February and March, the I&E Chief served as publicity chairman for the annual National Wildlife Week observance and all releases were slanted to the land acquisition needs of the Division.

In January, the annual banquet of the New England Outdoor Writers' Association was utilized as a means of securing additional publicity for the sportfish awards program.

In August, John Starret of the Division successfully swam the English Channel, and the I&E Chief was on hand to welcome him upon his return to the States, on behalf of the Governor and the Division. Releases and pictures concerning Starret were furnished to media both before and after the event.

The annual telephone information service on the opening day of deer season was conducted as usual, and the same system of providing spot news to media was instituted this year on the opening of fishing season.

Miscellaneous

I&E continued to handle all editing, printing and publishing functions for the Division.

Approximately 12,000 "Safety Zone" posters were distributed free to landowners by the districts and I&E.

An additional 43 metal highway signs calling attention to the importance of sportsmen's observance of the safety zone law were erected by the districts.

GAME PROGRAM

Dry weather and a forest fire danger caused the woods to be closed last fall, resulting in confusion about the opening of the waterfowl season and delaying the start of the upland season for about nine days. Despite this, all seasons were successful, and were extended after the deer season to make up for the loss.

After many years of research, we feel that our pheasant and quail stocking programs have been developed to the point where we are getting the most return for the money spent. Studies of the white hare stocking program indicate that more value would be received if hare were released only during the season. Plans were made to reappraise the deer data collected during the past fifteen years to find clues to the decline in deer harvests since 1958. Providing a place to hunt is still considered the principal object of the Game Section. Acquisition of land for management was accomplished to the extent of the limited funds available. Multiple use of Division lands was encouraged as much as possible without interference with the regular program.

The bulk of the research and management program is financed 75 percent by Federal Aid Funds (Pittman-Robertson), and such projects are so designated in this report.

FEDERAL AID PROJECTS

W-9-D - Statewide Development Project

The majority of the game section's time and effort is spent on this project. It consists of developing our wildlife management areas for public hunting, and is a year-round program, although activities are somewhat curtailed during the late winter on areas in the Berkshires. The work is broken down into the following categories: maintenance of office and storage buildings; construction and maintenance of water controls; maintenance of bridges; construction and maintenance of roads; maintenance and new posting of boundaries, entrances and special management signs; planting of wildlife trees and shrubs; spring and fall planting of annuals and perennials for wildlife food and cover; thinning and clearing of woodland; control of undesirable plant species; encouragement of natural fruiting species; and maintenance of wood duck nesting boxes. In addition to cutting and planting on the Westboro Beagle Training Area, a yearly census is made of the cottontail population there.

The management areas are located in Williamstown, Peru, Chester, Huntington, Winchendon, Hubbardston, Barre, Phillipston, Oxford, Uxbridge, Westboro, Newbury, Sudbury, Plymouth, West Bridgewater, Falmouth, and

Freetown. Emphasis is on pheasant hunting, but all areas provide other farm and forest game, and waterfowl are taken in limited numbers. Other sportsman uses are for field trials, dog training and target shooting. Although the areas are developed primarily for sportsmen, there has been a continual increase in year-round usage by the general public - a great deal of recreation is provided them by sportsmen's dollars. It is planned that this program will be increased many-fold to perpetuate the privilege of public hunting.

W-35-R - Game Population Trend and Harvest Survey

Statewide Deer Harvest. During the 1963 Massachusetts deer hunting season (November 11-23 archery; December 2-7 shotgun), hunters reported taking 3,072 deer. Archers killed 24 deer and shotgun hunters reported taking 3,048 deer. The total kill was 18 percent lower than an eleven-year average of 3,750 deer. Although good to excellent hunting conditions prevailed throughout the shotgun season, there were only 534 more deer reported killed than during the 1962 season.

The even sex ratio of 1.0 males to 1.0 females for the reported kill has remained constant for sixteen years.

For the first time in the history of this project, Worcester County ranked number one for deer kills with 674 reported. Barnstable County's deer kill was 50 percent below an eleven-year average.

Motor vehicles and dogs were the largest causes of deer mortalities other than hunting.

A comparison of checking station and statewide reported kill data shows a high kill (44%) on the first day reported at checking stations. The statewide high kill (39%) was recorded the last day of the season.

Deer Herd Composition. The reported deer kill for 1963 was 3,072 deer. Of these, 690 deer representing a 22.5 percent sample were processed at eight checking stations.

The sex ratio of deer checked was about even, males to females. The herd composition summary showed that 89 percent of the deer were found to be in the first four age classes. The fawn and 1-1/2 year age classes (55.5%) were similar with 28.0 and 27.5 percent respectively. The 2-1/2 year class made up 20 percent of the kill while the 3-1/2 year deer accounted for 13.5 percent. The remaining 11 percent included the 4-1/2 and older age classes.

The average male fawn weighed 81 pounds and the 1-1/2 year old buck weighed 127 pounds. Weights tend to level off for males at the 3-1/2 year age class when they average 188 pounds. Up to this weight,

the bucks show an increase of 30 to 40 pounds per year. The weight increase of 4-1/2 year and older deer for 1963 was only two pounds.

Doe fawn weights averaged 76 pounds. Female deer weights appeared to increase slowly after the 1-1/2 year class (117 pounds) and level off at the 3-1/2 year class (135 pounds).

Winter Waterfowl Census. The winter inventory was flown on January 6 and January 8, 1964. The flight included the whole coast from the New Hampshire line to the Rhode Island line and the islands of Nantucket and Martha's Vineyard. The total count of 130,700 ducks and geese was 25 percent higher than in 1963 and 46 percent higher than the ten-year average (1955-1964). Black ducks were up 13 percent over 1963 and 26 percent over the ten-year average. Canada geese were up 64 percent over 1963 and 93 percent over the ten-year average.

Mourning Dove Census. The 1963 spring count produced a breeding population index of 8. This is a 27.3 percent decrease from 1962. There was an average of 3.8 doves per route. There were 45 doves seen in 1963 as compared to 32 in 1962, an increase of 40.6 percent. Because of low populations, no fall counts were attempted in 1963.

Wood Duck Nesting Success and Brood Survival. In 1963, a total of forty-three nesting attempts by wood ducks were recorded at Great Meadows Refuge in Concord. This is similar to the usage obtained over the last five years, but hardly more than one-half the nests recorded on the average in the five years preceding 1959. The percentage of nests which hatched successfully and the number of ducklings produced were somewhat lower than last year, but this can be attributed to the unavoidable disturbance which resulted from increased project activity. Project personnel resumed the banding of incubating females which had last been done in 1959. Thirty-six females were captured in the nesting boxes. Of these, 14 were found to be already banded. Definite information on the age ratio of the breeding population and the proportion of first-year nesting females cannot be determined until the nesting check of 1964. A total of 229 ducklings was web-tagged in the nesting boxes at Great Meadows and an additional ten ducklings were web-tagged on Buttrick's Pond.

Banding traps were operated five days a week at Great Meadows from July 15 to September 27. A total of 379 new birds were banded and retrap data indicated a large proportion of the resident population had been captured. Only 24 percent of the tagged ducklings were traced to flight stage and this suggested poor brood survival. A majority of the young birds trapped at Great Meadows had not hatched from nests on the refuge and must have originated from natural tree cavities in the surrounding areas. The age ratio shown by the September trapping was 1.9 immatures per adult. Although this is an improvement over the ratio obtained in the last few years, it is still unsatisfactory and reinforces other indications of poor brood survival.

Each duckling was web-tagged and the allanantoic membrane from the hatched remains of each nest were inspected for symptoms of incipient omphalitis. The very few incidents of protruding navel or hemorrhage in the allantoic network appeared to preclude any likelihood that omphalitis could be a major mortality factor.

A total of 135 wood duck eggs were collected from nests at Great Meadows Refuge and cultures were prepared from them to test for the presence of paratyphoid bacillus. In addition, 67 fecal swabs were taken from wood ducks at the refuge but neither the eggs nor the swabs revealed any of the causative agents of paratyphoid.

Eggs collected at Great Meadows, the Sudbury-Concord Valley and two sites in central Massachusetts were analyzed for D.D.T. contamination. They included 176 wood duck eggs, 27 black duck eggs, three blue-winged teal eggs, two hooded merganser eggs, and four Canada goose eggs. Thirty-six percent of the wood duck eggs from Great Meadows contained D.D.T. and 60 percent of those collected in the Sudbury-Concord Valley were contaminated. The wood duck eggs from central Massachusetts were negative. Over 90 percent of the black duck eggs from the Sudbury-Concord Valley were positive and contained on the average three times as much D.D.T. as the Great Meadows wood duck eggs. Evaluation of the data collected indicated that the insecticide was being picked up on the local breeding areas. Further study is needed to determine the significance of this contamination and its effect on the survival of young wood ducks.

Experimental Turkey Stocking. A wild turkey restoration experiment was initiated in Massachusetts in 1960. Twenty-two wild turkeys were released in Quabbin Reservation, central Massachusetts, during 1960 and 1961. The over-winter survival in the winter of 1960-1961 was 62 percent. Good reproduction during 1961 and 1962 was followed by an over-winter survival of 27 percent in 1961-1962 and 32 percent in 1962-1963. An artificial feeding program was tried on an experimental basis during the winter of 1963-1964 and 60 percent of the fall population survived the winter. Eight turkeys were transplanted to the Holyoke Range in Hampshire County on February 26, 1964. One hen was returned to the Quabbin Reservation on May 15 when it appeared that the hen would not otherwise have been bred. Including the above hen, there were 19 turkeys present in May, 1964.

Twelve wild turkeys were at Mount Washington in the spring of 1963. Only six poults produced during 1963 survived until fall when eleven adults were also present. Fifteen turkeys remained in the spring of 1964.

Two to seven turkeys were present in the vicinity of October Mountain State Forest in the Spring of 1963. One or possibly two broods were hatched during the summer. At least four turkeys were present in the spring of 1964.

A release of 16 turkeys near Otis, Massachusetts in 1961 did not establish a population.

3304-21 Accelerated Public Works Program

During the fiscal year funds were made available to provide facilities and conduct habitat improvement on wildlife management areas, and to modernize and expand a state game farm to maintain production necessary to assuage hunting demand and wildlife management needs.

Five specific jobs were undertaken with this capital improvement program, each of which was awarded to an outside contractor on the basis of the lowest bid received. They were:

1. On the Downfall Wildlife Management Area in Newbury, 30 acres were marked for clearing. A combination office and storage building was planned and construction initiated there.

2. Plans and specifications were prepared by the Soil Conservation Service for construction of a low-level dike and water control structure for a small marsh management program at the West Meadows Wildlife Management Area in West Bridgewater. It is expected that work on this job will commence during the next fiscal year.

3. In the Myles Standish Wildlife Management Area in Plymouth, plans were formulated to clear-cut a strip 500 feet wide and one mile long in an old burn area; about 15 acres within the planned cutting area had been previously cleared. Total acreage of habitat improvement amounted to 50 acres.

4. A new wildlife management area is being developed in the southern portion of the Fall River-Freetown State Forest under this project. Plans specified clearing of 36 three-acre blocks with 15 miles of 20-foot wide access trails, and construction of four one-half acre parking areas on the periphery of the 1,000 acre tract.

5. Plans and specifications were prepared by division personnel to construct two brooder houses (132' X 14') and exterior runway pens, an open-front storage building (45' X 20') and loading platform, and a covered pheasant driving pen (2,540' X 36') connecting covered pens with enclosed open range.

White Hare Study

In 1961, the Division started an evaluation of white hare and hare stocking projects, To date, the study shows that it is not necessary to condition hare on the various state game farms. Survival data suggested that there was no difference between conditioned hare (held in pheasant pens for a minimum of fourteen days) and hare released on date of arrival.

During January of 1964, a total of 1,136 white hare were released on the date of arrival. After the close of the hare season, February 5, a total of 1,347 hare were released. All 2,483 hare were ear-tagged.

Many sportsmen expressed the opinion that such releases in season would be shot within a short period. Conversely, the tag return data show that only nineteen hare out of the 1,136 liberated were reported taken by gunners.

Tag returns also showed that of the 2,215 hare released in 1963, only 37 tags were returned during the 1963-1964 hunting season.

Division personnel will continue to compile hare data for a minimum of six years to fully evaluate the hare stocking program.

Wildlife District Activities

Non-federal aid game projects in the districts are of numerous varieties. The one single project that consumed most of the time in the districts was the stocking of pheasants, quail, and white hare in the appropriate months.

In other activities, the district crews controlled beaver, worked with sportsmen's clubs on various programs, aided in field trials, provided technical assistance to town conservation commissions as well as to individuals, aided in writing town plans, operated deer checking stations during the shotgun season, and performed a host of other related duties.

Game Farms

In an economy move, the number of division game farms was reduced from four to three with the closing of the Marshfield game farm at the end of the past rearing season. This closure was effected after careful investigation revealed that the division's entire game bird requirements could be reared by the other three farms.

In an effort to improve the present strain of ringneck pheasant, new brood stock was acquired. It was thought by many that other varieties could produce a larger, less cannibalistic, more disease-resistant bird. However, after extensive research, it was noted that our own variety of ringneck was superior to any available in other states or from private game breeders.

The Wilbraham game farm system was greatly improved through construction of two brooder houses, storage sheds and covered pens. Their completion will greatly enhance the value of the farm in terms of productivity and efficiency.

Pheasant and quail production this year was above average; figures are shown in the table below.

Routine maintenance work was carried out on all farms.

GAME DISTRIBUTION

July 1, 1963 - June 30, 1964

Pheasant		Hens	Cocks	Total
Adults:	Spring and summer liberations	6,167	771	6,938
Young :	August liberations (12 weeks)	4,345	8,540	12,885
	October-November liberations (17-25 weeks)	214	43,118	43,332
	Sportsmen's Club Pheasant Rearing Program	609	6,141	6,750
Totals:		11,335	58,570	69,905

Quail		Coturnix	Bobwhite	Total
Adults:	Spring and summer liberations	24	707	731
Young :	October-November liberations	0	3,329	3,329
		24	4,036	4,060

White Hare	Total
Northern varying, purchased	2,483

FISHERIES PROGRAM

During the past fiscal year the fisheries section continued to conduct its research and management activities through internal revenues from license sales and outside monies for federal aid projects.

Seven federal-aid projects were directed by personnel at the field headquarters in Westboro. Three of these were involved in research; the Quabbin Reservoir investigation, harvest studies on managed ponds, and the effect of water chemistry on fish survival. One project, statewide reclamations, was a development project, and one a coordination project; fish management coordination. The remaining two federal-aid projects were land acquisition programs, one on the Swift River, the other on the Squannacook River.

Quabbin Reservoir Investigations:

The tenth year of study at Quabbin Reservoir ended with the close of the 1963 fishing season and subsequent analysis of data collected. The creel census agent, working at the three boat launching areas, interviewed 10,884 fishermen during the six months from April to October. Population studies were carried out by rotenone and gill net sampling to supplement creel census information. Conclusive evidence of lake trout reproduction obtained in the creel census was confirmed by population studies. Recommendations for the coming season include outlines for a life history study of this exotic fish which was introduced by yearly stocking from 1952 to 1957. Trout stocking consisted of 20,000 yearling brown trout and 42,500 fingerling lake trout.

Creel Census Project:

In a creel census of three warm-water ponds in Central Massachusetts, an agent interviewed 565 anglers from April to October and 608 anglers from December to February. In a creel census of four reclaimed trout ponds on Cape Cod, an agent interviewed 1,221 anglers from April to October. Harvest data from successive years has been studied to determine the success of management techniques in warm-water and trout pond management. To determine differential recovery on stocked trout of various sizes a total of 50,000 brown and rainbow trout were marked and released.

Statewide Reclamation Project:

Ten trout ponds totaling 484 surface acres were completely reclaimed, and one trout pond of 203 surface acres was partially reclaimed from the surface to the thermocline. Rotenone in powdered and emulsifiable form was used. These ponds were subsequently restocked in October and November with 44,000 fingerling,brook, brown and rainbow trout, and in March and April with 22,370 catchable-sized trout of the same species.

Water Quality Survey:

The statewide project initiated to determine the reasons for variances in the stocking success of fresh-water fish was enlarged in scope. Chemical constitutents of our natural waters were intensely sampled and analyzed in an effort to determine seasonal variations.

A review of literature was undertaken to establish lethal concentrations of toxic materials in soft waters. Designed to correlate our work with related studies being done throughout the United States, the research helped in determining which chemical constitutents are deemed important in maintaining adequate fishable populations.

A total of 493 water samples were obtained from 51 ponds throughout the state. Taken on a monthly basis, these were analyzed for pH,

total alkalinity and iron content. Included in these water samplings were the five state fish hatcheries and Quabbin Reservoir. Analysis of this data shows marked variations during the four distinct seasons of the year.

Plans for more detailed studies of the chemical make-up of our natural waters include the acquisition of an atomic absorption spectrophotometer which determines the amount of metallic ions in water. Other complex equipment will be purchased to aid project personnel in determining any limiting factors to stocking success.

Swift River Acquisition:

Options to buy approximately 170 acres, including almost two miles of stream frontage, were obtained from three landowners. Options included outright purchases of stream banks and adjacent areas and, in one case, included a fishing easement 25 feet wide along approximately 1,000 feet of stream bank. The option on the largest tract (104 acres) was exercised during the year; the other two options are still outstanding. This project was conceived and initiated principally by the manager of the central wildlife district who also represented the division in negotiations with the landowners.

Pesticide-Insecticide Study:

Laboratory facilities at Westboro, although greatly expanded, have hardly been able to meet the ever-increasing demands for pesticide analysis. During the past year a total of 2,148 samples were processed. Samples of many varieties came from a wide range of sources: fish and game specimens from Connecticut, New Hampshire, and New Jersey; samples from the Massachusetts Division of Marine Fisheries; lake trout tissue for presence of insecticide residues; birds and fish suspected as victims of the careless use of pesticides, and others. Many of the samples were derived from several studies conducted: laboratory experiments to determine toxicity levels and concentrations of insecticides in various tissues; studies of the effects of pesticides on the biota of the Sudbury, Assabet and Concord River systems, and from the Westfield, Farmington and Connecticut River systems.

The cumbersome method of analysis using the spectrophotometer to determine insecticide content was largely replaced by the use of an electron-capture gas chromatograph provided by the Massachusetts Audubon Society.

Financial assistance from the University of Massachusetts has taken the form of salaries of personnel and loans of equipment for conducting studies to reveal the presence of DDT in songbirds and to show the effects of DDT on waterfowl.

TROUT WATERS RECLAIMED JULY 1, 1963 - JUNE 30, 1964

POND	TOWN	ACRES	LB/ACRE*
Lake Saltonstall	Haverhill	41	60
Millvale Reservoir	Haverhill	30	65
Lake Pentucket	Haverhill	45	64
Dug Pond	Natick	48	125
White Pond	Concord	43	107
Lake Lorraine	Springfield	30	112
Five Mile Pond	Springfield	43	48
Goose Pond	Chatham	21	73
Peters Pond	Sandwich	121	39
Deep Pond	Falmouth	24	127
Ashumet Pond	Mashpee	203	partial
Total		687	

*Estimated carrying capacity based on pounds recovered and percent of killed fish picked up.

Millvale Reservoir was not completely picked up due to remoteness of the pond.

Other contributions of money to be used for salaries and equipment in pesticide studies were received from the New England Interstate Water Pollution Control Commission, the Farmington River Watershed Association, the Connecticut River Watershed Council and the Westfield River Watershed Association.

Long Range Planning:

In the best interests of Massachusetts citizens and in conformity with our fisheries policy of attempting "to supply the best possible fishing for the largest number of people over the longest period of time", and additionally, in cooperation with the Federal Bureau of Outdoor Recreation, an intensive study has been initiated. This study entitled "Long Range Planning" is an endeavor to provide accurate information upon which to base plans for developing a progressive and meaningful program for Massachusetts inland sport fisheries that will best meet the future needs and desires of our citizens.

This study includes an inventory and appraisal of our surface waters, their quality, area, type,productivity, availability and accessibility. It relates the present resource to current fishing utilization and to potential future use. It reviews prior trends and management activities and projects past and current patterns so that future evaluations may be made. A survey of students in Massachusetts public schools, grades six through twelve, has been completed and the results analyzed. It is evident, based upon this survey and other data, that demands on Massachusetts sport fishing resources will be increased manyfold in the next 30-40 years. Finally, conclusions are drawn and recommendations made to direct division efforts into programs that will reward the Massachusetts angler seeking recreational satisfaction in the years ahead.

Full consideration has been given to an expected Massachusetts population increase of 100% by the year 2,000, to predicted additional leisure time, more disposable income, better facilities for travel to recreational areas, and to a public more cognizant of the values inherent in fishing and other recreational pursuits than ever before in history.

Trout Propagation

State and Federal Hatchery Production

A grand total of 1,679,620 brook, brown and rainbow trout weighing 344,844 pounds were distributed to Massachusetts public fishing waters during the past year.

Production of the five state hatcheries totalled 1,465,973 trout weighing 300,440 pounds. Of this number, 833,398 fish were "catchables" (six or more inches in length). In addition, 42,452 lake trout fingerlings were reared from eggs obtained from the New York Conservation Department and released in Quabbin Reservoir.

TROUT DISTRIBUTION IN MASSACHUSETTS FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1963 to JUNE 30, 1964

BROOKS		BROWNS		RAINBOWS		
Under 6"	Over 6"	Under 6"	Over 6"	Under 6"	Over 6"	TOTAL TROUT
301,875	464,957	197,000	449,976	133,700	132,112	1,679,620

Total Trout Distributed 6" - 9"	538,290	
Total Trout Distributed 9" plus	295,108	
Total Federal Trout Distributed 6" plus	213,647	
Total Catchables 6" plus..................................		1,047,045
Total Fingerlings 6" minus	632,575	
Grand Total..		1,679,620

STATION POUNDAGE

STATION	TOTAL LBS.	
Montague	69,151	
Palmer	42,464	
Sandwich	74,196	
Sunderland	95,658	
Sutton	18,971	
State Poundage......................................		300,440
North Attleboro	22,000	
Hartsville	10,533	
Nashua	11,871	
Federal Poundage....................................		44,404
Grand Total...		344,844

(This table does not show trout retained for brood stock)

State hatchery releases were supplemented by 213,647 trout weighing 44,404 pounds received from three federal hatcheries.

Early Spawned Federal Hatchery Trout:

Incubation of eggs at the Palmer Hatchery was discontinued in favor of receiving early-spawned fry and fingerlings from the federal hatchery at Attleboro.

Lake Trout Program:

Since research conducted at Quabbin Reservoir has revealed that a self-sustaining lake trout population now exists there, state hatchery facilities will no longer be required to produce lake trout for maintenance stocking. This discontinuance of lake trout rearing will provide much needed room for brook, brown, and rainbow trout.

Cold Water Temperature Studies:

Hatchery graphs compiled on water temperatures proved most helpful in evaluating our growth potential at all installations. Research was iniated at Sunderland by holding a small number of fry in specially constructed tanks inside one of the buildings. The growth of these fry was compared to a similar number of trout placed in outside pools. The experiment proved the need of having modern indoor facilities to advance growth in early spring.

Trout Coloration:

Through the years much experimentation has been carried on to improve commercial feeds for trout. Among these experiments are those involving the "brightening" of the colors in trout. Our trout were fed on dry self-sustaining pelleted feed enriched with paprika for three months. The paprika product contained a minimum of 194 mgs. calculated total carotene per pound, incorporated into fish pellets at a 3% concentration. Hatchery personnel commenced feeding paprika January first so that all trout liberated last spring had essentially "wild" coloration at very little expense to the division.

The experiment on a synthetic coloring additive, Canthaxanthin, was continued at the Sunderland hatchery. A trial lot of 2,750 brook trout was fed fish pellets containing 10 grams/ton Canthaxathin for six months. The experiment was dropped in April after very little visible color change was noted.

Construction

The rebuilding of eight ponds 75' X 10' X 30" with eight inch concrete walls heavily reinforced with ½" rods was completed at the

Montague hatchery. The Palmer hatchery reconstructed four fingerling rearing ponds with concrete walls and new cement dams. Drainage was rearranged to provide continued operation of this section. Additional repair work consisted of installing wood siding in several other ponds at the Palmer hatchery.

The Sandwich hatchery completed two concrete raceways connecting upper and lower sections of the hatchery for better use of existing water supplies. In addition, several new wells were installed in other sections of the hatchery. The back rearing ponds at Sunderland were completely rebuilt with new concrete dams, transite siding and drainage. Many rearing units were repaired. Damage caused by a wind storm was cleaned up and all usable timber was salvaged. The Sutton hatchery installed additional wells and made changes in their trout sorting facilities.

District Activities:

Wildlife district management activities included stocking of trout and warm-water fish, care and maintenance of the two culture pond systems, public fishing areas and other state property, and stream improvement on the Mashpee River. District personnel investigated pollution and fish kill reports, represented the division at fairs and shows and in meetings with sporting groups and civic organizations, advised individuals and groups in matters of fish pond management and weed control and cooperated with clubs in projects designed to supplement hatchery production of trout by contributions of additional club-reared fish. In late spring, routine duties were encumbered by the necessity to furnish tank trucks and drivers to counteract an unusually severe forest fire situation. Investigational work conducted by the districts included fish population checks in 49 ponds, a survey of streams and the Connecticut River, development of access to public waters and a survey of town-owned property in the Southeast.

The successful operation and maintenance of the two culture pond systems was almost entirely a district accomplishment. The Harold Parker State Forest pond system in North Andover, cared for by personnel of the Northeast Wildlife District, yielded approximately 2,335 pounds of adult yearling and fingerling largemouth bass and about 15 pounds of smallmouths for release in public fishing waters. The Merrill pond system in Sutton, attended by personnel of the Central Wildlife District, produced about 475 pounds of pickerel and 75 pounds of large mouth bass which were released in public waters.

Accelerated Public Works Program

Utilizing Accelerated Public Works funds, construction of a new fish sorting and holding building was initiated at the Harold Parker pond culture system in Andover. Plans call for razing an existing wood-frame structure and construction of a new reinforced concrete building with concrete block gable ends and aluminum roof. Charles Construction Company of North Andover, low bidder, was awarded the contract for this job.

REALTY PROGRAM

The Swift River in Belchertown is one of the best trout streams in the state. During the year, a sizeable tract of land along its banks was acquired by this division, making a good start in insuring this river's availability to sportsmen in the future.

Other tracts of land were acquired in Petersham and Winchendon. At the close of the fiscal year, the division held options on two more sizable tracts along the Swift River and also held options on five other parcels throughout the state.

A land ownership study was made along the Squannacook River in Townsend, Shirley, and Groton.

While manager of the northeast wildlife district, Director Shepard conducted a detailed and thorough study of the future land needs of the division and sportsmen for wildlife and fisheries resource management and utilization. The Realty Section worked in cooperation with the director on this vital project.

Leases which expired on public fishing grounds during the year were renewed.

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

Wild Turkey Project

A mild winter resulted in less mortality to turkey flocks than has occurred since stocking began in 1960. Eight turkeys, 2 gobblers and 6 hens were trapped and stocked on the Holyoke Range; results of this transplant appear unsuccessful. Several broods have been produced on Prescott Peninsula. Many of the groups are wild, and accurate counts have not been made. At least one brood of 11 was observed on October Mountain.

Pesticide-Wildlife Project

Field and laboratory work on the effect of DDT on Rufous-sided Towhees was completed. Results of this study are dependent on completion of chemical analyses of specimens at the Division's wildlife laboratory in Westboro.

Cottontail Rabbit Project

Experimental stocking of both species of Massachusetts Cottontail Rabbits (*Sylvilagus floridanus* and *S. transitionalis*) on an island in Quabbin Reservation was unsuccessful. At the end of the winter all rabbits had disappeared.

Mourning Dove Study

Graduate student Allan P. Richards has completed his Mourning Dove study and is writing his thesis *in absentia*. Several hundred doves were banded, over 100 nests studies, and distribution in the western part of the state (on the basis of coo counts) will be reported when Richards' thesis is completed.

Chemosterilant Studies

Studies by Dr. David K. Wetherbee on gull control have borne fruit this year. A black dye ingested by gulls gives promise of a practical method of controlling productivity in this species as well as in blackbirds and other nuisance birds. The embryo in the egg dies. This is a pioneer finding which may eventually become of great importance.

Woodcock Project

A new and highly efficient method of capturing woodcock on breeding grounds with mist nets was developed. The co-author of the woodcock manuscript withdrew during the year. This has necessitated extensive revision and rewriting of the manuscript which will be completed in the fall.

MASSACHUSETTS COOPERATIVE FISHERY UNIT

Quabbin Reservoir Projects

Life History of the White Perch

White perch were sampled during the summer and fall of 1964 for age and growth, feeding habits and condition factor data. The various sampling gear used included: gill nets, fyke nets, and hook and line. Certain concentrations of white perch were found, but collecting adequate samples proved very difficult. Some young of the year fish were finally located and captured by fyke nets late this fall. The project leader has become familiar with the area and problems involved in sampling and will begin an intensive sampling program this coming spring.

Life History of the Rock Bass

The very abundant rock bass in Quabbin Reservoir were readily collected during the 1964 field season. Fyke nets produced over 80 percent of the 1000 fish sampled. Fish ranging in size from several inches to nearly 12 inches were taken. However, most fish were less than seven inches in length. Basic life history data are currently being recorded for these specimens. A detailed stomach analysis has been initiated. Emphasis next summer will be placed on studies involving local population estimates and possible migratory behavior.

Brown Trout Studies

In a preliminary study 39 adult brown trout were collected and tagged in the Quabbin Reservoir from October 28 to November 20. A spaghetti type plastic bag was inserted in the backs of the larger fish, while a subcutaneous tag was placed in the belly of 17 smaller (117-220 mm.) immature trout seined from the tributary, Hop Brook. More effort will be made to tag trout next year in the tributaries and in the main reservoir as a full-fledged research project. The main goal of the project will be to obtain some information on the size of the brown trout population, their distribution and movements, homing tendencies, age and growth and relative success of their natural reproduction.

Connecticut River Project

Biological and Physical Survey of the Connecticut River

A biological survey of the Connecticut River was initiated late in the fall of 1964. The two graduate students assigned to the survey will collect fish by various sampling means for species composition and distribution. In addition, samples will be taken of the flora and fauna, water chemistry, bottom types and organisms, and some tagging of the important game species to obtain information on migration and movements. Mr. Leonard's project will concern the composition and distribution of the vertebrate biota of the river while Mr. Armour's project will concern the general ecology of the river.

GENERAL ADMINISTRATION

HOW THE SPORTSMAN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	3304-01	$ 86,283.47		
Fish & Game Board	"	622.60	86,906.07	6%
Information-Education	"		88,719.14	6%
FISHERIES MANAGEMENT				
Fish Hatcheries	3304-42	-	317,651.10	22%
Management	"	108,840.26		
*Fish Restoration Projects	3304-47	41,542.58		
Management	3304-51	80,960.17		
Plans Quabbin Hatchery	3304-54	20,000. -	251,343.01	18%
WILDLIFE MANAGEMENT				
Game Farms	3304-51	-	258,606.62	18%
Management	3304-51	80,960.17		
*Construction & Improvements	3304-21	30,004.44		
Wildlife Coop. Unit	3304-44	7,475.84		
*Wildlife Restoration	3304-53	135,520.51	253,960.96	18%
LAND ACQUISITION	*3304-53	-	17,349.-	1%
LAW ENFORCEMENT				
*Deer Damage	3308-05	7,897.49		
Public Hunting Grounds	3308-07	9,218.20		
Conservation Officers- Salaries & Expenses	1003-03	136,166.06	153,281.75	11%
			$1,427,817.65	100%

* Continuing Accounts

Expenditures under:

3304-21	50% reimbursable	by Federal	Funds,	APW Program	
3304-47	75%	"	"	"	"
3304-53	75%	"	"	"	"

RESERVE IN INLAND FISHERIES AND GAME FUND
AS OF JUNE 30, 1964 - $131,101.58

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES & GAME

Fiscal Year July 1, 1963 to June 30, 1964

ACCOUNT NO.	TITLE	APPROPRIATION	EXPENDITURES & LIABILITIES	REVERTED
304-01	Administration	$ 176,561.	$ 175,625.21	$ 935.79
304-42	Fisheries Management	474,692.	426,491.36	48,200.64
304-51	Wildlife Management	444,020.	420,526.96	23,493.04
304-54	Plans for Fish Hatchery Quabbin Reservoir	20,000.	20,000.	-
		$1,115,273.	$1,042,643.53	$ 72,629.47

		CONTINUING APPROPRIATIONS	EXPENDITURES	BALANCE FORWARD
304-21*	Construction & Improvments to Fish Hatcheries, Game Farms and Wildlife Management Areas (Accelerated Public Works)	142,414.	30,004.44	112,409.56
304-47**	Fish Restoration Projects (Dingell-Johnson)	108,183.99	41,542.58	66,641.41
304-53**	Wildlife Restoration (Pittman-Robertson)	219,711.10	152,869.51	66,841.59
		$ 470,309.09	$ 224,416.53	$ 245,892.56

* 50% reimbursable by Federal Funds

** 75% " " " "

SUMMARY OF FISH AND GAME INCOME

July 1, 1963 to June 30, 1964

Fishing, Hunting and Trapping Licenses	$ 1,145,313.50	*
Special Licenses, Trap Registrations & Tags	5,367.77	**
Alien Gun Permits	96.75	
Rents	3,729.00	
Misc. Sales and Income	4,738.93	
Pittman-Robertson Federal Aid	55,131.85	
Dingell-Johnson Federal Aid	15,348.02	
Court Fines	8,234.28	
Refunds Prior Year	1,683.14	
Archery Stamps	3,621.10	
	$ 1,243,264.34	

* See Detail Sheet #1

** " " " #2

DIVISION OF FISHERIES AND GAME
RECEIPTS FROM FISHING, HUNTING, AND TRAPPING LICENSES
Fiscal Year July 1, 1963 to June 30, 1964

Licenses	Price	Number	Gross Amount	Fees Retained by Clerk	Net Returned to State
Series #1 Res. Cit. Fishing	($4.25)	108,223	$459,947.75	$26,898.75	$433,049.00
" 2 " " Hunting	(4.25)	70,070	297,797.50	17,403.75	280,393.75
" 3 " " Sporting	(7.25)	39,073	283,279.25	9,719.00	273,560.25
" 4 " " Minor Fishing	(2.25)	21,359	48,057.75	5,318.75	42,739.00
" 4A " " Female "	(3.25)	17,691	57,495.75	4,397.00	53,098.75
" 5 " " Minor Trap.	(2.25)	250	562.50	62.00	500.50
" 6 " " Trapping	(7.75)	563	4,363.25	138.00	4,225.25
" 7 Non-Res. 7-day Fishing	(4.25)	2,103	8,937.75	522.25	8,415.50
" 9 " " Fishing	(8.75)	2,068	18,095.00	506.25	17,588.75
" 9 Alien Fishing	(8.75)	645	5,643.75	161.25	5,482.50
" 10 Non-Res. Hunting	(15.25)	1,685	25,696.25	381.75	25,314.50
" 12 Duplicate licenses	(.50)	3,334	1,667.00	0.00	1,667.00
" 15 Res. Cit. Sporting	(free)	13,625	----	----	----
" 17 " "(Old Age Asst.) Paraplegic and to the Blind)	(free)	658	----	----	----
		281,347	$1,211,543.50	$65,508.75	$1,146,034.75
Lakeville (check returned-insufficient funds)					4.25
Refunds to City and Town Clerks					717.00
					$1,145,313.50

DETAIL SHEET #2

ANALYSIS OF SPECIAL LICENSES ISSUED UNDER SECTIONS 48,68A, 102-3-4-105-6-7 and 112-A-B-C, Chapter 131, G.L. during the FISCAL YEAR ENDED

June 30, 1964

TYPE OF LICENSE		NUMBER ISSUED	RECEIPTS
Trap Registrations:			
	Initial	107	
	Renewal	613	$ 260.25
Fur Buyers:	Resident	25	250.00
Taxidermists:		59	295.00
Propagators:	(Special Fish)		
	Initial	19	
	Renewal	197	235.00
	(Fish)		
	Initial	5	
	Renewal	85	280.00
	(Birds & Mammals)		
	Initial	77	
	Renewal	301	1,288.00
	(Dealers)		
	Initial	4	
	Renewal	79	
	Additional	372	629.00
	(Ind. Bird or Mammal)		
	Initial	23	
	Renewal	45	45.50
Shiners for Bait:		233	
	Duplicates	2	1,166.00
Field Trial Licenses:		2	20.00
Taking of Carp & Suckers for Sale		1	10.00
Quail for Training Dogs:			
	Initial	11	
	Renewal	32	151.00
Commercial Shooting Preserves:		5	250.00
" " "	Tags	500	25.00
Tags:	Game	5592	279.60
	Fish	18,342	183.42
		TOTAL:	$ 5,367.77

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1964.

CHAPTER 145: ACTS, 1964:	An act prohibiting the altering of any license or permit issued by the Division of Fisheries and Game.
CHAPTER 156: ACTS, 1964:	An act relative to the taking of Shad.
CHAPTER 192: ACTS, 1964:	An act making certain provisions of law relative to the closing of the hunting season by Proclamation of the Governor applicable to hunting on coastal waters.
CHAPTER 390: ACTS, 1964:	An act permitting the Division of Fisheries and Game to issue permits for the trapping of certain birds.
CHAPTER 438: ACTS, 1964:	An act authorizing the Public Access Board to provide public access to certain inland waters.
CHAPTER 445: ACTS, 1964:	An act authorizing the Director of the Division of Fisheries and Game to sell and convey certain property in the town of Marshfield.
CHAPTER 527: ACTS, 1964:	An act authorizing agents of the Division of Fisheries and Game of the Department of Natural Resources to remedy certain conditions caused by beavers.
CHAPTER 48:RESOLVES,1964:	Resolve providing for an investigation and study by a special commission relative to the inland conservation laws.
CHAPTER 62:RESOLVES,1964:	Resolve providing for an investigation and study by the Department of Natural Resources, the Division of Fisheries and Game and the Metropolitan District Commission relative to the hunting of deer and to the poisoning of feeder streams of the Quabbin Reservoir.

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1964, AND SUMMARY OF OUTSTANDING REGULATIONS.

August 4, 1948. Rules and regulations for the artificial propagation and maintenance of fish.

August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.

July 14, 1952. Rules and regulations for hunting with bows and arrows.

August 12, 1953. Rules and regulations governing sale of protected fresh water fish by licensed dealers in Massachusetts.

March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts, effective April 9, 1954.

January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.

April 10, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire, effective April 10, 1956.

February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.

February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.

October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.

December 23, 1961. Rules and regulations regarding Lake Garfield in the town of Monterey.

May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the Commonwealth.

January 1, 1963. Rules and regulations relating to the hunting of deer in Massachusetts.

January 1, 1963. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.

August 24, 1963. Migratory game bird regulations 1963-1964

October 1, 1963. Rules and regulations relating to hunting of pheasants, quail, and ruffed grouse in Massachusetts.

October 10, 1963. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.

October 21, 1963. Rules and regulations relative to the use of poison in killing mammals or birds

December 15, 1963. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.

January 1, 1964. Interstate fishing regulations on Wallum Lake.

April 10, 1964. Rules and regulations relating to the taking of certain fish in Massachusetts.

RETIREMENTS - 1964 FISCAL YEAR

Aug. 31, 1963: Joseph Slaby, Conservation Helper, at Palmer Fish Hatchery

June 30, 1964: Allan S. Kennedy, Supt., Bureau of Wildlife Research & Management

COMMONWEALTH OF MASSACHUSETTS

DIVISION OF FISHERIES AND GAME

Ninety-ninth Annual Report

July 1, 1963 to June 30, 1964

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Publication Approved by Alfred C. Holland, State Purchasing Agent #9

Division of Fisheries and Game

COMMONWEALTH of MASSACHUSETTS
DIVISION of FISHERIES & GAME

1965

Annual report

James M. Shepard, Director
Government Center
100 Cambridge Street
Boston, Massachusetts

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1965
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The Commonwealth of Massachusetts
Division of Fisheries and Game
73 Tremont Street, Boston 02108

His Excellency, John A. Volpe, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of the Division of Fisheries and Game.

Sirs:

I have the honor to submit herewith the One-Hundredth Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1964, to June 30, 1965.

This marks a most significant year in the century-long tradition of public service of this agency which is charged with managing and perpetuating the wildlife resources of the Commonwealth for the benefit and enjoyment of its more than five million citizens. I think it is most fitting as this agency marks its official Centennial Observance, that this report indicates both a continuance of this tradition as well as major consideration for the future.

I trust you will find it most informative and worthy.

Respectfully submitted
James M. Shepard
JAMES M. SHEPARD

DIRECTOR

THE COMMONWEALTH OF MASSACHUSETTS

DIVISION OF FISHERIES AND GAME

One Hundredth Annual Report

July 1, 1964 - - - - - - - - - - - - - June 30, 1965

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Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent

800-3-66-942332 Estimated Cost Per Copy: $1.27

FISHERIES AND GAME BOARD

The 100th annual report of the Division of Fisheries and Game does more than just mark completion of another year, it also marks the end of a century (and the beginning of another) of public service by this state agency charged with properly managing wildlife resources of the Commonwealth for the benefit of its more than five million citizens.

This report summarizes a number of outstanding achievements. While reported on in more detail in the various sections of this report, the Board wishes to comment on certain items of special importance.

Early in the centennial year, the director wisely decided that unusual expenditure merely to observe a 100th birthday was not warranted. Accordingly, observance of the event was held to special activities which could be readily worked into existing activities with little added expense. In addition to publicity on the event through routine information means, a number of large brook trout were tagged with special tags, for the return of which each successful angler received a handsome, signed certificate. Similar plans were prepared for tagging a number of cock pheasants during the next fiscal period. Other similarly inexpensive observances are planned.

Natural reproduction of lake trout at Quabbin Reservoir appears to be an accomplished fact, foretelling continued good fishing for this species.

Perseverance and dedication of our hatchery personnel again produced a large number of trout for stocking throughout the Commonwealth. This was in the face of the fourth year of continued drouth which produced tremendous water problems at all hatcheries. State production during the reporting period totalled 1, 981, 570 trout weighing 315, 258 pounds. When added to federally produced fish, this meant a total of 2, 111, 164 trout weighing 343, 793 pounds available to Massachusetts anglers throughout the season.

An outstanding achievement was realized in April, when nearly 15, 000 landlocked salmon were stocked in Quabbin Reservoir. A gift of the U. S. Fish and Wildlife Service, these fish may become the nucleus of a salmon fishery in Massachusetts, something that has not existed almost from the start of the division's 100-year history.

Production of pheasants at our game farms continued high, with 68, 574 birds released to open covers throughout the state. Of this total, 51, 443 were cock birds. In addition, 3, 020 quail and 2, 500 varying hare were released.

Studies reveal that 76 percent of Massachusetts hunters succeed in taking game, and that harvests during the reporting period are on the increase. This speaks well for the quality of hunting in the Commonwealth, maintained in the face of decreasing wildlife habitat and hunting area.

Waterfowl inventories along the coast during the winter months established that there were 37 percent more ducks wintering in Massachusetts than the average of the past ten years.

Wild turkey introductions at Quabbin, Mount Washington and October Mountain appear to be holding their own. It appears that the population is remaining remarkably stable, but

is not producing an increase at this time which could allow hunting.

All personnel have been involved in providing conservation services to private individuals and organizations to a greater degree than formerly. As the Commonwealth's chief wildlife conservation agency, the division is feeling increasing interest in wildlife on the part of the public, and is striving to meet this demand with the particular type of counsel and assistance that only this division can supply.

Studies reveal that 58. 8 percent of Massachusetts hunters hunt only on private land, while 34. 9 percent hunt both private land and division-controlled areas. The remainder hunt only division areas. However, the future is obvious; the time is not far off when hunters will depend more than ever on publicly owned areas. Accordingly, the division continued to seek ways and means of establishing more areas while alleviating pressure on private lands. Properties were added to the Swift River area, the Phillipston-Petersham area, Birch Hill, the Northeast Area, and the Podick hatchery. A tract was acquired on the Quaboag River, and two gifts, one a tract in Northboro, and the other a right-of-way to Knopp's Pond, Groton were received.

Despite an 18 percent decrease in its budget, the information and education program continued its efforts to arouse public sentiment in favor of conservation and to acquaint the public with operations of the division. At the year's end, 52, 281 people were regularly receiving the division's magazine.

International recognition of the division's program was received when the I&E Chief was unanimously elected president of the American Association for Conservation Information, an international professional association in the field. This action reflects the esteem in which this program is held by its peers in other states and Canada.

A record number of youth were scheduled for the 17th annual junior conservation camp, with 150 boys completing the course. This program is unique in that it does not draw on the budget, being totally financed by tuition fees paid by the boy's sponsors.

Division television programs received their third first-place award in international competition in the past four years.

Division news releases, of which 143 were issued during the reporting period, continued to be well received by the press, radio and television stations, who made wide use of them.

Despite the fact that the end of the fiscal year showed a reserve of $250, 193. 61 in the Inland Fisheries and Game Fund, the Board does not feel that the division is in a particularly favorable financial condition. It is our policy to retain at least $200, 000 in reserve to cover emergencies and to provide for periods when revenue drops. In addition, increasing expenses for routine programs, the need for new programs to meet increased demands on our wildlife resources, and a recent history of poor finances make further demands upon our financial resources.

At this time our legislation to secure matching funds for a much-needed land acquisition program has not been secured. Even if passed, this measure will not mitigate financial problems facing the division since these funds will be earmarked for a specific purpose and will contribute nothing to other activities of the division. However,

the division does appear to be in a better financial condition than in recent years, due largely to extensive economics practiced at all levels, and to increased efforts to promote greater interest in hunting and fishing in the Commonwealth.

Mr. Roger D. Williams, Natick, resigned as Chairman at the meeting on April 27, 1965, due to his plans to move from the state. Mr. Harry C. Darling, East Bridgewater, was elected Chairman, and Mr. Edward Tierney, Pittsfield, was elected Secretary at this same meeting. There were no changes in Board membership during the reporting period.

The Board of the Division of Fisheries and Game expresses its sincere appreciation to all personnel of the division for their continued exemplary performance, and wishes also to express its sincere appreciation to the Governor, Executive Council, General Court, and to those other departments, agencies, members of public information media and the general public who have assisted and supported our programs in the past year.

Respectfully submitted,

Harry C. Darling, Chairman
Edward J. Tierney, Secretary
Roger D. Williams
F. Stanley Mikelk
Martin Burns

FISHERIES PROGRAM

Introduction

Research and management activities were continued with emphasis being directed toward establishment of ground work data for future reference and inclusion of this data for successful management of game fishes. Three research projects, Quabbin Reservoir Investigations, Harvest Studies on Managed Ponds and Effect of Water Chemistry on Fish Survival, were continued, as well as one development project, namely, Statewide Reclamations. Newly created projects include: Stream Development, Connecticut River Survey, Warmwater Research, and one land acquisition project at Sandy Pond, Plymouth. Continuation of two access projects, Swift River Acquisition and Squannacook River Land Acquisition, were incorporated in the activities.

Projects were increased in scope to bring problem areas under study, to develop suitable habitat and successful stocking programs. Areas where information is lacking were taken under study to lend credence to heretofore accepted measurements and to delineate limiting factors in fish production.

Quabbin Reservoir

The eleventh year of study at Quabbin Reservoir has been completed. The creel census agent interviewed 10,066 fishermen from April to October, representing 53,498 angler trips. During this period, a total of 40,259 pounds of fish were harvested. The most heavily harvested fish was the brown bullhead, followed by white perch, yellow perch, lake trout, largemouth bass, brown trout, sunfish, chain pickerel and rainbow trout. Changes in the trout catch were significantly noted with all other species of trout giving way to the growing lake trout population. Lake trout releases of illegal size fish increased 3.2-fold due to the entrance of naturally spawned fish into the catch data.

Sampling of test coves was conducted to obtain information on the composition of fish populations not indicated by angler census.

Information concerning the life history of lake trout, the number and age of spawning adults, sex ratios, food habits, and residual DDT was gathered and analyzed.

Physical and chemical characteristics of the water and basin were taken to determine the suitability of habitat for successful expansion of this fishery at the reservoir.

Stocking included 258 brood stock and two-year-old rainbow trout and 20,000 brown trout. Indications of a developing and expanding lake trout fishery through natural reproduction curtailed stocking of this species.

Biological reconnaisance indicated that the reservoir possessed ecological niches suitable for the introduction of land-locked salmon without decimating the existing lake trout population. Accordingly, on 21 April, 1965, a total of 14,420 fingerlings were obtained from Craig Brook National Fish Hatchery, East Orland, Maine and stocked in Quabbin Reservoir. The possibility of transporting these fish long distances was established. Mortality was negligible with only two fish succumbing. Biologists are continuing their investigations to determine the survival rates of this initial stocking but expect no significant reproduction or establishment of a self-sustaining fishery.

Water Chemistry Survey

The statewide project to determine the effects of dissolved minerals on aquatic life was continued. The chief factors under study, which influence chemical equilibrium, are temperature, concentration of reactants and the specific chemical nature of the reacting substances.

Research was undertaken to derive the theoretical accuracy of the anayltic processes and the probable rates of reaction occurring under natural conditions which affect aquatic life.

Water samples from 157 stations were analyzed with an atomic absorption spectrophotometer and other quantitative equipment. Analyses of Quabbin Reservoir and the five state fish hatcheries were completed. Marked variations occur between winter and summer sampling. Limnogeographical maps are being prepared to assist biologists in planning stocking and aiding research.

Plans for more detailed studies involving analysis of bottom types, ground water

supplies and run-off are contemplated.

Pesticide-Insecticide Study

During the past year over 3, 000 samples of various fish and game species were analyzed for pesticide residues. The bulk of the investigations were concerned with a monitoring program, initiated in 1962, on the biota of the Sudbury, Assabet and Concord rivers.

Incidental short-range investigations were carried out for the State of New Jersey, the University of Massachusetts, and various watershed organizations. Personnel from the Waltham Field Station served as apprentices in the laboratory prior to the establishment of a similar laboratory at Waltham.

The use of an electron-capture gas chromatograph provided by the Massachusetts Audubon Society was continued. A cooperative program to study the effects of the insecticide "Sevin" on aquatic populations was undertaken with the Department of Natural Resources during their gypsy moth spraying program. A total of 480 samples were analyzed for this project.

Financial assistance was received from the University of Massachusetts for personnel and equipment necessary to the implementation of studies on DDT and its relation to songbirds and waterfowl.

The U. S. Department of Public Health granted the Massachusetts Division of Fisheries and Game a grant of $20, 000, renewable for three years, to establish a statewide stream monitoring program in the field of pesticide pollution.

Statewide Reclamations

Two warmwater ponds totaling 108 acres and three trout ponds totaling 178 acres were reclaimed. These ponds were subsequently restocked with trout fingerlings and with bass and pickerel yearlings reared in the state hatcheries and culture systems. Stocking was based on information obtained from the research project which evaluated harvest data of Cape Cod and central Massachusetts ponds. One additional pond was given a partial reclamation.

Stream Access and Improvement Project

This project was initiated to create fisherman access to streams by cutting streamside trails, creating new roads, and improving existing roads for vehicle access. Four areas currently under improvement are: Birch Hill, Westville, West Hill and Swift River.

Improvements are to be brought about through facilitating access in vehicles and on foot, and through betterment of fish populations by habitat improvement.

District Activities

Wildlife district management activities included care and maintenance of two culture pond systems, stocking of trout and warm-water fishes, maintenance of public fishing areas and habitat improvement.

An intensive creel census was conducted on opening day using ground and aerial counts.

District personnel investigated fish kills, advised groups in fish pond management and cooperated with sportsmen's clubs in projects designed to provide increased interest in conservation.

The Harold Parker State Forest Pond System in North Andover, cared for by the Northeast District, yielded approximately 1, 785 pounds of adult yearling and fingerling bass and a small amount of smallmouth bass. The Merrill Pond System in Sutton, attended by the Central Wildlife District, produced about 550 pounds of chain pickerel and 450 pounds of largemouth bass. All were released in public waters.

POND RECLAMATIONS

POND	TOWN	ACRES	LBS./ACRE
Plunkett Pond	Hinsdale	73	76
Benedict Pond	Monterey	35	126
Whalom Pond	Lunenburg	99	105
Uncas Pond	Franklin	18	132
Jamaica Pond	Boston	61	138
Wright's Pond	Medford	24	105

TROUT PROPAGATION

State and Federal Hatchery Production

A grand total of 2,111,164 brook, brown and rainbow trout weighing 343,793 pounds were distributed in Massachusetts public waters during the past year.

Production of the five state hatcheries totalled 1,981,570 trout weighing 315,258 pounds. The total number of catchables (six inches and over) were 1,467,449. In addition an inventory of 5,100 lake trout fingerlings and yearlings were released in the Quabbin Reservoir in the fall of 1964 and spring of 1965.

State hatchery releases were supplemented by 129,594 trout weighing 28,535 pounds were received from three Federal hatcheries.

Water Resources

The drouth which has prevailed in the northeast did affect many of our hatchery installation during the past year by reduced water flows through the hatchery systems. However, the installation of aerators and pumps and the re-use of some water made it possible for our fish culturists to attain a normal liberation of fish for the stocking programs.

Lake Trout

In 1962 it appeared that the lake trout introduced into Quabbin Reservoir during 1952 - 1957 would not sustain themselves through natural reproduction therefor lake trout eyed eggs were again requisitioned through the Conservation Department of the State of New York for incubation at our Sunderland and Montague fish hatcheries. The resulting fingerlings were stocked in the Reservoir as previously reported.

A similar request was again made early in 1963 for eyed lake trout eggs in an effort to promote the lake trout fishing. However, creel census returns in late 1963 revealed that the lake trout had finally become available in promising number for the fishermen.

In view of the commitment to receive the eggs it was decided to incubate them and the resulting inventory of 34,900 fingerlings was liberated in Quabbin during October, 1964, and a balance of 5,100 was wintered at the Sunderland hatchery and planted in the Quabbin in June 1965. These fish were fin clipped for identification from the native population in the Reservoir.

Nutritional Research

During the past several years we have carried on research feeding with brands of pelletted fish food other than Silver Cup to determine their comparable results with the rations presently being fed at our hatcheries. On November 30, 1964, all feeding research was dropped due to low blood count and general losses from the two brands of food other than Silver Cup.

Coloration Work Continued

The original intent of continuing this work was to provide the fishing public with more attractive catches. Research proved that colder waters failed to allow the fish to assimilate the food on an equal basis with hatcheries having warmer well water. Therefor, the additive Paprika which was incorporated into the pellets at a 3% level and fed three months starting in January was reduced to a 2% level and fed throughout the year. The change provided stocking fish of equal appearance from all hatcheries.

We are continuing an interest in paprika containing a minimum of 194 mgs. of carotene per pound because of the concentration of vitamins discovered in this product and because this additive, when incorporated into the diet of brood stock, seems to effect fertility of eggs and results in more fry production.

Construction

The Montague hatchery completed two concrete raceways approximately 100 feet each, with an outlet for cleaning and water control. This work completes the section from the roadway down to the railroad tracks.

The Palmer hatchery completed a series of cement raceways to accommodate the early advanced brook, brown and rainbow fingerlings from the U. S. Fish and Wildlife Service. Repairs were made to several existing ponds. Several 2" wells were driven for emergency water pumping. Due to the closing down of hatching operations the crew were busy through the winter trimming trees to reduce fire hazard.

The Sandwich hatchery undertook construction of another block of six cement ponds which, when completed, will finish work in the area opposite the administration buildings and provide much needed parking area for visitors.

A 10" gravel packed well was installed at East Sandwich complete with pump and supplied with three phase current. Some repair work was undertaken at the station with lumber from Birch Hill. Many new 2" wells were installed at both the hatcheries.

The Sunderland hatchery reconstructed five south-center section ponds with concrete dams, with cleanouts and cement sides. Also two long ponds next to the lower roadway were reconstructed with concrete and cleanouts. Several new 2" wells were installed at both of these stations.

The Sutton hatchery water system to the sorting house was completed by installation of a new cement distributing box and new piping to the troughs. Many oak trees were salvaged for lumber and fuel for the hatchery. Several small wells were installed because of the continued drouth.

Equipment

Several new trucks were purchased; many new pumps and water aerators were acquired to keep our hatcheries in operation.

Hartsville Hatchery

The Federal fish hatchery at Hartsville will be operated by the Massachusetts Division of Fisheries and Game beginning July 1.

Fish and Game personnel will continue the operation under the temporary direction of a U. S. Fish and Wildlife Service supervisor. The U. S. F. W. S. is also leaving most of the fish stock and equipment there to expedite state operation.

The Hartsville station has an annual production capacity of about 18, 000 pounds of trout.

TROUT DISTRIBUTION FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1964 TO JUNE 30, 1965

BROOKS		BROWNS		RAINBOWS		
Under 6"	Over 6"	Under 6"	Over 6"	Under 6"	Over 6"	TOTAL TROUT
314,000	691,242	220,715	458,324	109,000	317,883	2,111,164

Total Trout Distributed 6-9"	1,017,764	
Total Trout Distributed 9" plus	320,091	
Total Federal Trout Dist. 6" plus	129,594	
Total Catchables (6" plus)		1,467,449
Total Fingerlings (6" minus)		643,715
GRAND TOTAL		2,111,164

STATION POUNDAGE

STATION	TOTAL LBS.	
Montague Hatchery	77,134	
Palmer Hatchery	41,909	
Sandwich Hatchery	65,379	
Sunderland Hatchery	115,084	
Sutton Hatchery	15,752	
State Poundage.		315,258
North Attleboro	11,345	
Hartsville	6,222	
Nashua, New Hampshire	10,968	
Federal Poundage		28,535
GRAND TOTAL		343,793

(This table does not show trout retained for brood stock)

MASSACHUSETTS COOPERATIVE FISHERY UNIT

In conjunction with the Division of Fisheries and Game, the University of Massachusetts has initiated research projects involving Quabbin Reservoir, the Connecticut River and small artificial ponds in central Massachusetts.

At Quabbin, 1, 600 specimens of both white perch and rock bass were studied with emphasis placed on age and growth, breeding habits, embryology and fecundity.

The Connecticut River survey is designed to evaluate the recreational potential of that river. The feasibility of using aerial photographs to indicate present and potential land use for recreational development is being studied.

Ecological, geological and physical survey of the river are coordinated with the Division of Fisheries and Game biological sampling and creel census work.

Utilization of small artificial ponds in Massachusetts has increased in the postwar period. This study is designed to increase our present knowledge of the importance of these impoundments to develop a sound fish management program in this area.

ANNUAL REPORT

GAME PROGRAM

We have attempted to conduct a balanced game program during the past year. Propagation of pheasants and quail was still the largest budget item. Management of Division controlled lands for public hunting was the next highest. There was an increase in money spent on game research. Here again we tried to maintain a balance between basic and applied research. Acquisition of game management lands was at the bottom of the list in financial expenditure, but high in planning. With such limited acquisition funds, many areas were considered, but only a few could be given purchase priority. We were fortunate to have the bulk of our upland season during the regular period in spite of a woods closure in the middle of November due to extreme forest fire conditions.

As reported in the past, the bulk of game research, management and land acquisition was financed 75 percent by Federal Aid Funds (Pittman-Robertson). Those projects are so designated in the following report.

FEDERAL AID PROJECTS

W-9-D - Statewide Development Project

The development of wildlife management areas for public hunting was done on this project. It had a budget of $117, 000. 00. Work was done on 14 areas located in the towns of Williamstown, Peru, Chester, Huntington, Winchendon-Royalston-Templeton, Hubbardston, Barre, Oxford, Uxbridge, Westboro, West Newbury, Ayer-Shirley-Lancaster, Plymouth, Falmouth and Freetown. This work was scheduled for the entire year and consisted of: maintenance of office and storage buildings (94 man days); maintenance of water controls (3 man days); maintenance of bridges (25 man days); development and maintenance of roads (185 man days); posting of boundaries, entrances, roads etc. (272 man days); planting wildlife trees and shrubs (73 man days); planting herbaceous wildlife food and cover (371 man days); clearing land by bulldozer, brush cutter, axe and chain saw and spraying herbicide (634 man days); controlling undesirable plant species (6 man days); encouragement of natural fruiting species (5 man days); maintenance of wood duck nesting boxes (108 man days) In addition, about 30 man days were spent cutting and planting on the Westboro Beagle Training Area along with the annual census of the cottontail rabbit population located there.

W-35-R - Game Population Trend and Harvest Survey
Small Game and Waterfowl Harvest

A return of 1089 postal cards or 73. 9 percent was obtained from the initial mailing of 1500 questionnaires. Each return was calculated to represent 100. 32 hunters. It was assumed that data from non-respondents would have been similar to that of the respondents.

The majority (69 percent) of 1963 licensees did hunt in 1964 and 76 percent of them were successful in taking some species of game. Ten percent of those who hunted spent their time in pursuit of deer only.

Grouse, quail, white hare, raccoon, woodcock, gray squirrel, black duck and other duck all showed an increased kill over 1962. The pheasant kill was almost the same but the cottontail rabbit kill declined.

In regard to hunting pressure (preference), pheasants were first, followed by grouse, cottontails, woodcock, white hare, gray squirrel, black duck, other ducks, quail and raccoon.

For hunter success, the species were ranked in the following order: gray squirrel, other ducks, black duck, cottontail, rabbit, pheasant, grouse, white hare, woodcock, quail and raccoon.

The majority (58. 8 percent) of the hunters reported using private land only for their sport. About 6 percent (6. 3) hunted only on state management areas. Approximately 35 percent (34. 9) used both private land and state areas.

There was a calculated total of 48, 856 deer hunters in 1964. The mean deer kill was . 0472 which gave a calculated total kill of 2306 deer compared with 2277 reported during the deer season. The greatest percent (30. 5) of deer hunters reported they hunted the whole week. Those hunting one day (Monday or Saturday) were next (29. 4 percent). Next

were those hunting two days (21.4 percent) of which one day was Monday or Saturday. The remaining 19 percent hunted from three to five days. Those gunners who hunted all week were most successful followed by those who hunted only Monday or Saturday.

Statewide Deer Harvest

During the 1964 deer season, Massachusetts hunters reported killing 2277 deer. Shot gun hunters harvested 2260 deer of which 1063 were males and 1,191 were females. Six hunters neglected to report the sex of the deer. Archery hunters bagged 17 deer (10 males and 7 females). For the first time in 16 years, the sex ratio of the reported kill changed from an even ratio of bucks to does to a heavier kill of does (100 males: 112 females).

A single factor that may have affected the 1964 deer kill was the severe ice conditions that persisted throughout most of the shotgun season.

The reported kill per county fluctuated with Franklin County holding number one position. Berkshire County remained second and Worcester County dropped from number one position (for 1963) to number three position.

Archers had a split season due to forest fire danger in the middle of November.

The 1964 reported deer kill was 38 percent less than the average kill for the twelve previous years. The largest percent of deer mortalities other than by legal hunting is caused by motor vehicles and dogs.

Determination of the Quantity of Deer Range in Massachusetts

All acreage was considered deer range after subtracting the amount used for human needs and activities such as homes or other dwellings, factories, airports, parks, roads and highways, market gardens, etc. Reported deer range does not necessarily signify the presence of a deer population. The final acreage figure will be further refined when such things as closed towns are considered.

Deer range data are on file at Westboro for 351 towns and cities. From the cover survey data compiled in 1952, the estimated deer range in Massachusetts amounted to 3,955,192 acres. The location of deer range per town or city has not been plotted on maps.

Determination of the Removal Rate of Deer in Massachusetts

Mortality data from kills caused by other than legal hunting are recorded by conservation officers. These were tabulated for the years 1961 through 1964. In order of importance, motor vehicles (61%) and dogs (24%) caused 85 percent of the mortalities. The remaining 15 percent were made up from illegal gun kills; crop damage kills; unknown causes and miscellaneous causes.

The average kill from all causes other than hunting was 446 deer per year.

The average ratio of known sex deer kills for a four-year period, 1961 to 1964, was 100 males to 117 females. Kills per month showed high female mortality in all months except during October and November.

Deer were reported killed in 270 (77%) of the 351 towns and cities in Massachusetts.

No evidence was found of deer deaths due to disease or starvation.

Determination of Deer Hunting Pressure in Massachusetts

Results of a deer hunter survey were analyzed. Due to the method used to conduct the survey, a statistical analysis was not possible. The calculated number of Massachusetts deer hunters was 48, 700. Roughly 50 percent of the 445 hunters interviewed reported killing a deer. Only ten hunters said they had wounded a deer. The average age of 443 deer hunters was calculated to be 34 years. Married hunters outnumbered the unmarried hunters at a ratio of 100 to 38. Factors affecting the amount of time spent deer hunting are listed in order of importance: work; none (or nothing); finances; school; family; weather; health.

The deer hunters interviewed hunted an average of three days. The computed minimum average number of miles traveled by those deer hunters was 95 miles round trip. Roughly 55 percent (243) of 444 hunters interviewed had hunted deer for one to ten years. Successful hunters (301) reported killing 1, 443 deer or roughly five deer per successful hunter during that period. A large percent (73%) of Massachusetts deer hunters (326) said they shot the first deer they saw. Only 27 percent (116) indicated they were selective. When questioned on shooting preference the hunters' answers, in numerical order, were: 228-none (no preference); 200-buck; 73-doe; 59-buck or doe; 3-fawn.

The most popular deer hunting method in Massachusetts is the stand or still method. This method is followed in preference by stalking, tracking, drive and a combination of all four methods. Most deer hunters (81%) hunted in or with a party. The average party size was three hunters. Deer hunters used an average of one vehicle per party.

During the 1964 deer week, the deer hunter spent an average of $26. The 419 hunters interviewed reported a total expenditure of $10, 856. 18. Deer were reported seen by 258 (58%) of the 445 hunters interviewed. A total of 600 deer were seen by 256 hunters or an average of two deer per hunter. Only 54 (12%) of the hunters interviewed reported killing a deer in 1963.

Winter Waterfowl Census

The winter inventory was flown on January 5 and January 6, 1965. The flight included the whole coast from New Hampshire to Rhode Island and the islands of Martha's Vineyard and Nantucket. The total count was 132, 500 ducks and geese which is 1. 4 percent higher than 1964 and 37 percent higher than the ten-year average (1956-1965). Black ducks were up 13. 7 percent over 1964 and 35. 2 percent over the ten-year average. Diving bay ducks (scaup golden-eye, buffle-head) were down 23. 9 percent from 1964 but up 3. 6 percent from the ten-year average. Diving sea ducks (scoter, eider, oldsquaw) were up 18. 1 percent over 1964 and 62. 1 percent over the ten-year average. Canada geese were down 25. 9 percent from 1964, but were up 33. 3 percent over the ten-year average.

Mourning Dove Census

The 1964 mourning dove call count survey showed a breeding population index of ten. This is an increase of 25 percent over 1963 (eight). An average of 5. 0 doves per route was heard.

There were 37 doves seen in 1964 compared to 45 seen in 1963.

Spring Quail Census

The 1964 spring census of quail in Barnstable, Plymouth and Bristol Counties showed no significant difference (.05) from 1961 or a four-year average, 1958-1961. Apparently the quail population in southeastern Massachusetts is fairly stable. Although the index in Barnstable County is somewhat lower than previous years, it is not enough to be considered serious at this point.

Wood Duck Nesting Success and Brood Survival

In 1964, there were 38 nesting attempts by wood ducks at Great Meadows Refuge of which 31 were successful. These produced 364 ducklings. The banding of incubating females was continued and 35 nesting hens were handled. An additional four females were checked and banded on boxes at Buttricks ponds. Twenty-six of these 35 birds were known to be old females and only four were known to be yearling birds. The five remaining hens were unbanded and untagged and may have been young birds which had originated from natural cavities outside the refuge. The disproportion of old birds indicates a failure in recruitment of young birds to the resident, breeding population.

Dual incubation in a nesting box was recorded when a male and a female wood duck were found to be simultaneously occupying the same box. The male persisted in incubation with the female until the eggs hatched.

Project personnel collected 190 wood duck eggs from eight sites in the Sudbury-Concord area and central Massachusetts for D.D.T. analysis.

In connection with the insecticide studies, 98 ducklings, were hatched at the University of Massachusetts, hand-reared to four or five weeks of age and then released at Great Meadows Refuge. These ducklings, web-tagged at hatching, were leg-banded on release, and their survival and development traced through the summer trapping and banding program.

Eighty-five percent (311) of the 364 ducklings which hatched on Great Meadows were web-tagged before they left the nesting box. Banding traps were operated five days a week from July 14 to October 2. Eighty-seven or 28 percent of the ducklings tagged at Great Meadows were recaptured. Of these, 71 or 23 percent of the total (311) were traced to flight stage. Twenty-six of the hand-reared birds were recaptured and traced to flight stage or beyond. The September age ratio of only 1.5 immatures for each adult again indicated poor brood survival.

A comparison with the table of development constructed during the previous study (1952-1954) showed that the hand-reared birds exhibited normal growth and development after release on the marsh, but the wild-reared population was stunted. It was surmised that a lack of readily available insect food might have been responsible for the stunted growth of ducklings at Great Meadows.

Experimental Turkey Stocking

A wild turkey restoration experiment was initiated in Massachusetts in 1960. During 1960 and 1961 a total of 22 wild turkeys were released in Quabbin Reservation. The population has not increased since 1961, but has exhibited remarkable stability. During the summer of 1964, the number of poults produced, and the survival of poults from hatching to fall, was the lowest since stocking was terminated in 1961. Over-winter survival, however, was the highest recorded to date. A winter feeding program was probably partly responsible for the higher fall to spring survival. Twenty-one turkeys were present in April 1965.

At Mount Washington, eleven turkeys were released in 1961. This population has also exhibited no growth. Fifteen turkeys were present in September. Fifteen turkeys were observed in February, 1965 and most, if not all, probably survived the winter. This population has been fed by residents of the area almost continuously since 1961.

Twenty-nine turkeys were released on October Mountain State Forest in Washington during 1961 and 1962. One tom and three hens were present in April, 1964. At least two broods were produced. A minimum of 16 turkeys were present in September. Fourteen were fed during the winter. At least twelve turkeys were present in April 1965.

Sixteen turkeys were released at Otis in 1961. There is no evidence that any turkeys have survived in the area.

Eight wild turkeys were transplanted from Quabbin Reservation to the Holyoke Range in 1964. There apparently was no reproduction. Two hens were trapped and returned to Quabbin. One hen was killed by an automobile. The fate of the other five turkeys is unknown.

Several effluent seepages in central Massachusetts were sampled during the summer of 1964 and the winter of 1964-1965. Fifty-one kinds of plants were found in 28 seeps during the summer. The estimated amount of plant material per square foot of seep during the winter was 16.1 grams.

Non-Federal Aid Work

District personnel were involved in many game management activities which were financed entirely by state funds. Starting in the spring, they checked the pens of all clubs who applied for birds on the club rearing program. They delivered the six-week-old pheasants to those approved clubs. During the early summer there was the distribution of surplus brood stock. In the late summer and fall there were pheasants and quail to be released following a pre-arranged schedule. White hare were stocked during December, January and February.

There were numerous requests for conservation services. From spring to late fall, there were continual beaver complaints to answer. Traps were supplied for rabbit and raccoon damage complaints. Advice was given to many clubs, towns and individuals on conservation planning for their lands. Many wildlife management areas have target ranges. These were continually serviced and permits were issued for their use. Limited camping in conjunction with fishing and hunting trips was encouraged on some management areas. Permits were

issued for this activity.

All district personnel were deputized and spent many man-days patrolling management areas during the upland season and deer week. They were alerted for duty during the fire season and provided both labor and equipment to combat forest fires.

All beaver trappers are obliged to bring in their pelts to be counted, measured and tagged. District game crews manned those checking stations. In cooperation with the United States Fish and Wildlife Service, they ran census routes to determine the spring population of woodcock in Massachusetts.

Many hours were spent assisting the Realty Section in land acquisition for game management areas. Land offered for sale was inspected. Priorities for acquisition were made. Negotiations were made with the landowners for options and with the town and city officials for permission to purchase.

During the year forest game management plans were prepared for the major state forests. The purpose of these plans is to provide general guidance for an overall wildlife management project for forest game species.

Game Farms

The 1965 pheasant production was slightly below previous years due primarily to above normal rearing losses. Quail production was normal.

New construction was limited. A new incubator cellar at the Sandwich State Game Farm will aid greatly the rearing program. Only a few pens were constructed but annual maintenance of previously built pens and buildings was continued.

Investigations of newer and more economical methods of game bird propagation was conducted at all three game farms.

Game bird disease research was coordinated with the Massachusetts Cooperative Wildlife Research Unit, University of Massachusetts, in an effort to eliminate a few existing rearing problems.

GAME DISTRIBUTION

July 1, 1964 - June 30, 1965

Pheasant		Hens	Cocks	Total
Adults:	Spring and summer liberations	5, 574	839	6, 413
Young:	August liberations (12 weeks)	10, 419	3, 103	13, 522
	October-November liberations (17-25 weeks)	225	40, 575	40, 800
	Sportsmen's Club Rearing Program	913	6, 926	7, 839
Totals:		17, 131	51, 443	68, 574

Quail		
Adults:	Spring and summer liberations	484
Young:	Fall liberations	2, 536
Totals:		3, 020

White Hare

Northern varying, purchased	2, 500

White Hare

Between the period of January 1, 1965 and February 28, 1965, a total of 2, 500 hare were purchased by the Division of Fisheries and Game for release in Massachusetts covers. All hare were ear tagged with numbered tags which were also stamped with a return address. The hare appeared to be in good physical condition. Some hare were released during the open gunning season. To date, tag returns have been minimal.

The cottontail rabbit population appears quite high. The drought conditions of 1965 apparently did not inhibit the cottontail population.

Fur Report

The 1964-1965 fur harvest as reported by twenty-one fur buyers is as follows:

Muskrat	34, 235
Mink	914
Otter	31
Skunk	14
Raccoon	855
Weasel	16
Red Fox	29
Grey Fox	20
Beaver	1, 196

Field Trials

Field trials held on division areas	12
Beagle trials held on division areas	5
Miscellaneous trials held on division areas	4

Wild Turkey Project

Although there was good survival of turkeys during the winter of 1963-64, there was low survival of poults. Approximately 21 turkeys in central Massachusetts were alive in September. A good brood was produced at October Mountain, with 14 turkeys alive in early fall. Fifteen turkeys were present in late summer at Mount Washington.

Mourning Dove Study

Allan P. Richards has completed the first draft of his thesis on mourning doves and the final report should be available next year.

Woodcock Study

The manuscript of the woodcock book is now in the hands of a publisher.

Chemosterilant Studies

A field pilot study on Nantucket of the gull reproductive inhibitor, Sudan Black, was initiated. Field work was transferred from Cape Ann to Nantucket and Muskeget Islands.

Effect of DDT on Wood Ducks

A pilot study on the effect of DDT on wood ducks was initiated. Difficulties in keeping ducks suggest that results will not be reliable.

Black Duck Productivity on Beaver Ponds

Graduate student Philip B. Stanton began a study of black duck productivity on beaver ponds of different ages. Final results will be completed and reported in 1965.

REALTY PROGRAM

Prior to the start of the fiscal year Director Shepard submitted a new realty policy to the Administrative Board for its consideration. This policy was subsequently approved by the board and put into operation.

Basically its purpose was to concentrate all land and water acquisition and leasing programs in one place in the organizational set-up of the division. The new realty policy as adopted by the board called for the establishment of a Realty Section equal in status to the other sections in the division and charged with the entire responsibility of expeditiously executing a program of land and water acquisitions contingent on appropriations made by the General Court. Purchase of land and water areas for fish and game purposes has become increasingly important in the last few years and at the same time increasingly difficult to accomplish. The director, fully cognizant of these facts, felt that the placing of all real estate activities of the division in one section would solidify the basic structure of the division and produce for sportsmen more land and water for each dollar spent.

The realty policy as adopted also made provisions for a Realty Advisory Committee. This committee is composed of employees of the division and a representative from the Department of Natural Resources. The duties and responsibilities of this committee are to fully investigate, thoroughly discuss and consider all proposed land and water acquisitions filed with the realty chief and determine those deemed most advantageous to the needs of the division.

These judicious actions have now manifested themselves in a step-up of acquisitions and a cutting down of the time between option and purchase.

During the year the division received two very important gifts. One was a parcel of the land and the other a right-of-way to a pond. Mr. and Mrs. Jameson D. MacFarland of Northboro were the donors of approximately 80 acres of land in Northboro. How do we adequately thank people like Mr. and Mrs. MacFarland? This might best be left to the generations of wildlife, which will have a better home, more food and more protection because the MacFarlands were thoughtful and generous. Donations of land or water areas are always welcome and appreciated by the division. Willing to the division of lands or waters owned by one who loves and appreciates the outdoors and the vast world of nature will guarantee to future generations a place to nuture their inherent right to know and love wildlife and to do their part to perpetuate its myriad of species and forms.

The other gift to the division was a launching site and parking area on Knops Pond in Groton. This very valuable piece of property was given by the Squannacook Sportsman's Club. If there is one category of land which rates high on the priority list it is access points on ponds or rivers. The Squannacook Sportsman's Club is to be congratulated for their unselfishness in giving up the ownership of this launching site so that all fishermen can make use of and enjoy it.

During the year, the division added two more parcels to its holdings on the Swift River, added to its Phillipston-Petersham area, to the Birch Hill area, to the Northeast area and a very important parcel to the Podick Hatchery holdings in Sunderland. At year's end, transactions were completed for the purchase of a550-acre tract along the Quaboag River in Brookfield and West Brookfield, to be known as the Quaboag Valley Wildlife Management Area.

Also in various stages of completion were tracts in Berkshire, Essex, Middlesex, Norfolk, Hampshire, Plymouth, Bristol and Worcester counties.

The Realty Section handled many requests from other segments of the division for engineering and related work, and made preliminary investigations on many parcels which were offered for sale to the division but were ultimately refused because of title complications or other related reasons.

INFORMATION AND EDUCATION PROGRAM

The Information and Education Program of the Division of Fisheries and Game continued with its 17th year of operation, spearheaded by the Information and Education Section and assisted by other personnel throughout the division. Of particular note among those whose duties regularly include information and education functions are the four wildlife management districts, on whose collective shoulders fall most of the meetings with sportsmen's clubs and other groups, working with various organizations, conducting information tours, giving technical advice to the public and to conservation groups, and carrying on considerable personal contact work.

Purpose of the overall program is to develop and maintain a state of public concern and effective action on behalf of natural resources, particularly those affecting wildlife. That this program and others like it in every state have been successful is axiomatic - never before in the history of this country has so much public and private concern for the condition of our natural resources and the natural beauty of our country been expressed. From White House to the residence of John Doe, America is concerned, and what's more important, beginning to act.

This could only have happened as the logical result of years of public information and conservation education programs by those agencies concerned with resource management. But the job is not done; it can never be done. The pace must be maintained and expanded so that millions of new citizens each year become properly acquainted with the importance of conservation. In fact, there are many areas, many subjects and many mediums for the spread of information that have not been touched because information and education budgets and staffs have traditionally been too small.

During the reporting period, the following activities which lend themselves to enumeration were conducted:

News Services

A total of 143 separate news stories were distributed to media as follows:

I & E Section news releases: 97
I & E Section television news films: 32
District news releases: 14

An innovation by the I & E Section late in the fiscal year was a weekly series of "spots;" short items to be used as spot announcements on radio and tv and as fillers by newspapers. These were sent out in addition to regular news coverage. Initial results from newspapers have been very gratifying, particularly among the weekly papers. However, radio and tv usage has been difficult to determine. A mere handful of radio stations have replied to inquiries; a very few broadcasts have been heard by various employees. This does not mean that the spots are not being used, only that these media are impossible to monitor in the same degree that the newsclipping service monitors newspapers. The I & E Section has a standing weekly commitment to provide tapes of spots to one radio station. These have been well received.

A survey of newsclips resulting from division releases shows that 2,838 clippings were received, a drop from last year to just above average usage. However, it should be noted that usage bears only incidental relation to the number of releases made. The news value of the story, its timing, and credence placed in it by the press still determine its usage.

Continual personal contact with press personnel by districts and I & E personnel resulted in 12 feature articles and 42 columns in addition to those resulting from releases. I & E furnished additional pictures, information and writing assistance on numerous occasions to feature writers both in state newspapers and national magazines.

Massachusetts Wildlife Magazine

A total of 52,281 subscribers were receiving the magazine at the close of the reporting period, a net gain of 3,937. Nearly twice this number applied for the magazine, the net gain being influenced by the more than 3000 routinely dropped as "undeliverables" by reason of inaccurate address. Subscription promotion, never an active project, was discouraged during the reporting period as plans were underway to screen the full mailing list. The gain achieved represented solely those individuals who personally wrote to, or appeared at, the office of the magazine. Readership of the magazine is conservatively estimated in excess of 150,000.

During the reporting period a complete study of mailing list control methods was completed. Recommendations to adopt a re-subscription method similar to those used by magazines for which a subscription fee is charged, were adopted. By the end of the next reporting period, the entire individual list will have been offered an opportunity to re-subscribe. Those who do not return the subscription coupon found in their magazine will be summarily dropped from the list. This process will be repeated every three years.

Publications

No new publications were added to the stock maintained for public distribution due to lack of printing funds, but work was continued and funds encumbered for a forthcoming exhaustive treatise on the wood duck in Massachusetts.

Routine publication by the I & E Section of the annual report, stocked waters list, fish and game law abstracts, closed town list, license forms and archery stamp was accomplished.

Advertising and Promotion Out of State

During the reporting period the I & E chief completed a study of advertising and promotion needs and possibilities and made recommendations in a report to the director. This is presently under consideration by the Department of Commerce.

Basically a choice of two programs was proposed. One would cost $199,846 a year to bring in an estimated $551,250 revenue in new license sales plus an estimated $10,500,000 in additional business and tax benefits. The other would cost $77,199 a year to bring in an estimated $183,750 revenue in new license sales plus an estimated $3,500,000 in business and tax benefits.

Either program would involve advertising in out-of-state newspapers and magazines in the basic market area, out-of-state promotion through all news media, exhibitions at travel and sports shows out-of-state, provision of promotional literature, film circulation, and other promotion measures. The difference between the two programs would be largely a matter of extent of activity and staffing required to carry out the program.

Conservation Education

A total of 148 boys completed the 17th annual Junior Conservation Camp program, which is planned and directed by the I & E chief in cooperation with the Department of Natural Resources and Massachusetts Conservation, Inc.

The I & E Chief continued to serve as the division's representative on the Massachusetts Advisory Committee for Conservation Education and the Conservation Education Editorial Board, both in cooperation with the Department of Education.

Sportfish Awards Program

The second year of the sportfish award program was completed, with gold pins and plaques awarded to holders of the following record catches for calendar 1964:

Largemouth Bass	---10 lbs.	Bluegill	---11 inches
Smallmouth Bass	--- 6 lbs. 10 oz.	Bullhead	---20 inches
Chain Pickerel	--- 7 lbs. 11 oz.	Channel Catfish	---30 inches
Rainbow Trout	--- 5 lbs. 15 oz.	Calico	---17 1/2 inches
Brown Trout	---13 lbs. 9 oz.	White Perch	---15 3/4 inches
Lake Trout	---12 lbs. 1 oz.	Yellow Perch	---16 5/8 inches
Walleye	--- 8 lbs. 8 oz.	Brook Trout	---18 inches
Shad	--- 6 lbs. 3 oz.	Northern Pike	---13 lbs. 12 oz.

Standing all-time state records as of January 1, 1965 are:

Largemouth Bass	---12 lbs. 1 oz.	Brook Trout	---19 inches
Pickerel	--- 9 lbs. 5 oz.	Shad	---6 lbs. 13 oz.
Walleye	--- 8 lbs. 8 oz.	Bluegill	---11 inches
Lake Trout	---13 lbs. 1 oz.	Channel Catfish	---13 lbs. 8 oz.
Brown Trout	---18 lbs. 8 oz.	Calico Bass	---17 1/2 inches
Rainbow Trout	--- 6 lbs. 13 oz.	White Perch	---16 inches
Smallmouth Bass	--- 6 lbs. 10 oz.	Yellow Perch	---16 5/8 inches
Northern Pike	---13 lbs. 12 oz.	Bullhead	---22 1/2 inches

Meetings

Major professional recognition of an international scope was awarded the division I & E program when the I & E Chief was elected president of the American Association for Conservation Information at that international body's annual conference in Sun Valley, Idaho, in June.

District personnel attended or participated in 222 meetings with sportsmen's groups, civic and fraternal associations, youth and church groups, besides numerous meetings with

individuals and various local groups to advise directly on wildlife management projects. I & E personnel averaged about two such meetings per week throughout the year.

Exhibits

Districts and I & E participated in or aided a total of ten major exhibits at sportsmen's shows and fairs during the reporting period. A few minor exhibits of limited duration were also handled.

Audio-visual aids

The I & E Section prepared and presented 14 "Dateline Boston" half-hour television shows, nine "Critter Corner" 15-minute shows, appeared as a live tv guest on six occasions and as a radio guest on five, during the reporting period. A number of guest appearances by other personnel were arranged. Districts reported participating in 12 radio and/or tv guest appearances. Television programs of this division received a first-place award, for the third time in four years, from the American Association for Conservation Information.

Approximately 59, 760 people saw division films at club showings exclusive of use on television. The 16 titles in the free-loan library were booked a total of 747 times. No new films were added to the library this year because of shortage of funds.

The usual large quantity of management photos was processed for the technical staff.

Internal Communications

As a means of informing all employees of current major activities and items of importance, publication of "TOPICS" was continued as a report of staff meetings. Three issues were published during the reporting period.

As usual, all division employees had opportunity to read I & E Section releases which are sent to all supervisors and brought to the attention of all employees. While it would be more desirable to send every employee personal copies of releases, this was not possible due to shortage of postage funds.

The annual division-wide employee's conference was conducted in February with all sections cooperating.

Special Events

The I & EChief served as publicity chairman for National Wildlife Week, and a series of releases was issued stressing the theme on pollution, tying this in with water problems in Massachusetts. A proclamation proclaiming the observance was arranged with the office of the Governor.

In January the annual banquet of the New England Outdoor Writer's Association was utilized as a means of securing additional publicity for the sportfish awards program.

Telephone information services were again conducted on the opening days of deer and fishing seasons.

In June, special attention was given to a meeting of northeast fish and game directors in Massachusetts.

Tours and Demonstrations

District personnel conducted ten separate tours for the press and 12 "Show Me" trips for public groups.

The Western District conducted groups from sportsmen's clubs, the Izaak Walton League, Boy Scouts and residents of the Pittsfield area on four tours of the Peru Management area.

The Central District conducted groups of bird watchers and two school classes on two tours of the Westboro Area.

The Northeast District conducted a group of sportsmen's leaders on a tour of the Squannacook area.

The Southeast District conducted field trips on several areas for the University of Massachusetts, Bridgewater State College, the Legislative Committee on Natural Resources, and the Northeast Fish and Game Director's Association.

Miscellaneous

About 6500 "Safety Zone" Posters were distributed by the districts and another 2500 by the I & E Section. The districts also erected 26 additional metal "Safety Zone" highway posters, and 65 additional general educational posters of various types.

GENERAL ADMINISTRATION

How The Sportsmen's Dollar Was Spent

Administration				
Administration	3304-01	$ 110,678.01		
Fish & Game Board	"	600.00	$ 111,278.01	7%
Information-Education	"	-	72,955.81	4 1/2%
Fisheries Management				
Fish Hatcheries	3304-42	-	335,639.46	21%
Management	"	120,948.98		
Construction & Improvements	3304-21	21,650.00		
*Fish Restoration Projects	3304-47	52,867.98		
Management	3304-51	89,302.85		
Fisheries Research Cooperative Unit	3304-55	10,000.00	294,769.81	18%
Wildlife Management				
Game Farms	3304-51	-	242,827.91	15%
Management	"	89,302.85		
Construction & Improvements	3304-21	90,758.62		
Wildlife Research Cooperative Unit	3304-44	9,060.21		
*Wildlife Restoration	3304-53	176,010.09	365,131.77	22 1/2%
Land Acquisition	*3304-47	15,038.00		
	*3304-53	21,466.00	36,504.00	2%
Law Enforcement				
*Deer Damage	3308-05	5,822.75		
Public Hunting Grounds	3308-07	9,944.32		
Conservation Officers - Salaries & Expenses	3360-01	143,730.43	159,497.50	10%
			$1,618,604.27	100%

* Continuing Accounts

Expenditures under 3304-47 and 3304-53
75% reimbursable by Federal Funds.

Reserve in Inland Fisheries and Game Fund

As of June 30, 1965 - $250,193.61

Appropriations and Expenditures

Number	Title	Appropriation	Expenditures & Liabilities	Reverted
3304-01	Administration	$ 185,878.00	$ 184,233.82	$ 1,644.18
3304-21	Construction & Improvements to Fish Hatcheries, Game Farms and Wildlife Management Areas	112,409.56	112,408.62	.94
3304-42	Fisheries Management	481,695.00	456,588.44	25,106.56
3304-51	Wildlife Management	442,238.00	421,433.61	20,804.39
		$1,222,220.56	$1,174,664.49	$ 47,556.07

Number	Title	Continuing Appropriations	Expenditures	Balance Forward
3304-47**	Fish Restoration Projects (Dingell Johnson)	$ 119,120.41	$ 67,905.98	$ 51,214.43
3304-53**	Wildlife Restoration (Pittman-Robertson)	253,841.59	197,476.09	56,365.50
		$ 372,962.00	$ 265,382.07	$107,579.93

** 75% reimbursable by Federal Funds

Summary of Fish and Game Income

Fishing, Hunting and Trapping Licenses	$ 1,191,084.50 *
Special Licenses, Trap Registrations & Tags	5,645.26 **
Alien Gun Permits	155.25
Rents	3,291.00
Misc. Sales & Income	77,739.51
Pittman-Robertson Federal Aid	122,847.02
Dingell-Johnson Federal Aid	55,337.68
Accelerated Public Works Projects	2,200.00
Court Fines	7,678.50
Refunds Prior Year	20.40
Archery Stamps	3,675.90
	$ 1,469,675.02

* See Detail Sheet #1

** See Detail Sheet #2

Detail Sheet #1

Receipts From Fishing, Hunting and Trapping Licenses

Licenses	Price	Number	Gross	Fees Retained By Clerk	Net Returned to State
Series #1 Res. Cit. Fishing	($4.25)	110,788	$470,849.00	$27,511.50	$443,337.50
" 2 " " Hunting	($4.25)	75,228	319,719.00	18,673.50	301,045.50
" 3 " " Sporting	($7.25)	40,663	294,806.75	10,113.75	284,693.00
" 4 " " Minor Fishing	($2.25)	20,661	46,487.25	5,144.50	41,342.75
" 4A " " Female Fishing	($3.25)	17,678	57,453.50	4,392.75	53,060.75
" 5 " " Minor Trap	($2.25)	211	474.75	52.00	422.75
" 6 " " Trapping	($7.75)	641	4,967.75	156.75	4,811.00
" 7 Non-Res. 7-day Fishing	($4.25)	2,105	8,946.25	525.00	8,421.25
" 9 " " Fishing	($8.75)	2,345	20,518.75	570.75	19,948.00
" 9 Alien Fishing	($8.75)	576	5,040.00	144.00	4,896.00
" 10 Non-Res. Hunting	($15.25)	1,853	28,258.25	411.50	27,846.75
" 12 Duplicate Licenses	($ .50)	3,341	1,670.50	---	1,670.50
" 15 Res. Cit. Sporting (over 70 years of age)	(Free)	16,970	---	---	---
" 17 " " (Old Age Assistance Paraplegic and to the Blind)	(Free)	1,161	---	---	---
		294,221	$1,259,191.75	$67,696.00	$1,191,495.75
Refund to City and Town Clerks					411.25
					$1,191,084.50

Detail Sheet #2

Analysis Of Special Licenses Issued Under Sections 48, 68A, 102-3-4-105-6-7 and 112-A-B-C, Chapter 131, G. L.

TYPE OF LICENSE		NUMBER ISSUED	RECEIPTS
Trap Registrations:			
	Initial	121	
	Renewal	657	$ 285.25
Fur Buyers:	Resident	28	280.00
Taxidermists:		72	360.00
Propagators:	(Special Fish)		
	Initial	9	
	Renewal	204	222.00
	(Fish)		
	Initial	8	
	Renewal	83	289.00
	(Birds & Mammals)		
	Initial	60	
	Renewal	320	1,260.00
	(Dealers)		
	Initial	5	
	Renewal	82	
	Additional	379	650.00
	(Ind. Bird or Mammal)		
	Initial	27	
	Renewal	54	54.00
Shiners for Bait:		221	
	Duplicates	4	1,107.00
Field Trial Licenses:		2	20.00
Quail for Training Dogs:			
	Initial	18	
	Renewal	42	216.00
Commercial Shooting Preserves:		4	200.00
	Tags	1,000	50.00
	Posters	100	5.00
Trapping of Certain Birds:		8	40.00
Tags:	Game	6,240	312.00
	Fish	29,501	295.01
		TOTAL:	$5,645.26

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1965 as of August 17, 1965:

CHAPTER 76, ACTS, 1965:	An act further regulating fishing by means of a bow and arrow.
CHAPTER 129, ACTS, 1965:	An act providing protection for the gray seal.
CHAPTER 435, ACTS, 1965:	An act authorizing the Commonwealth to grant easements over, across and upon certain land in the towns of Groveland and Georgetown, for the transmission of electric power, to Massachusetts Electric Company.
CHAPTER 466, ACTS, 1965:	An act providing that permits for commercial shooting preserves may be issued in all counties of the Commonwealth.
CHAPTER 574, ACTS, 1965:	An act directing the Director of the Division of Fisheries and Game to convey certain land in the town of Boxford to the County of Essex.
CHAPTER 70, RESOLVES, 1965:	Resolve further reviving and continuing the special commission established to make an investigation and study relative to the inland conservation laws.

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1965, AND SUMMARY OF OUTSTANDING REGULATIONS.

August 4, 1948, Rules and regulations for the artificial propagation and maintenance of fish.

August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.

July 14, 1952. Rules and regulations for hunting with bows and arrows.

August 12, 1953. Rules and regulations governing sale of protected fresh-water fish by licensed dealers in Massachusetts.

March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts, effective April 9, 1954.

January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.

April 10, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire.

February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.

February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.

October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.

May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the Commonwealth.

January 1, 1963. Rules and regulations relating to the hunting of deer in Massachusetts.

January 1, 1963. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.

October 10, 1963. Rules and regulations relating to hunting of pheasants, quail, and ruffed grouse in Massachusetts.

October 10, 1963. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.

October 21, 1963. Rules and regulations relative to the use of poison in killing mammals or birds.

December 15, 1963. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.

January 1, 1964. Interstate fishing regulations on Wallum Lake.

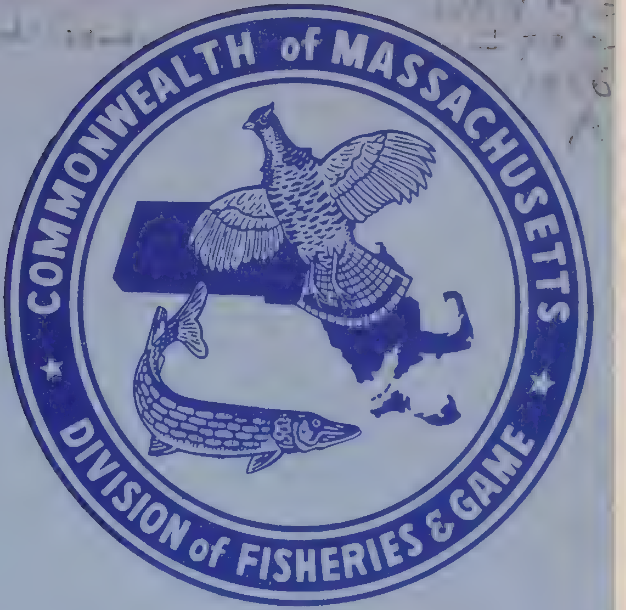
April 10, 1964. Rules and regulations relating to the taking of certain fish in Massachusetts.

August 31, 1964. Rules and regulations for trapping of birds by farmers.

September 1, 1964. Migratory Game Bird Regulations 1964-1965.

April 1, 1964. Interstate Fishing regulations on Congamond Lake, Hamilton Reservoir, Colebrook Reservoir, Perry Pond, Muddy Pond, and Breakneck Pond.

Mass.: Division of Fisheries and Game



COMMONWEALTH of MASSACHUSETTS

DIVISION of FISHERIES & GAME

1966

Annual report

James M. Shepard, Director
Government Center
100 Cambridge Street
Boston, Massachusetts

STATE LIBRARY OF MASSACHUSETTS

APR 28 1967

STATE HOUSE, BOSTON

MASS. OFFICIALS

The Commonwealth of Massachusetts
Division of Fisheries and Game
State Office Building, Government Center
100 Cambridge Street, Boston 02202

His Excellency, John A. Volpe, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of the Division of Fisheries and Game.

Sirs:

I have the honor to submit herewith the One Hundred and First Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1965 to June 30, 1966.

While the annual report is customarily a record of accomplishments of the past year, this one is significant in that it not only begins a second century of public service for this agency, but also because it represents in a very real sense a crossroads for decision.

As the Division of Fisheries and Game begins its second century of service, it is faced with greater public demand for additional services, higher costs for existing services, and a narrowing financial base. The record shows conclusively that the public at large benefits directly from services provided by this agency. At present the public at large does not contribute financially to those services. It is my belief that General Fund monies rightfully must be used to augment the limited sportsmen's license revenue upon which this Division has so long depended.

Respectfully submitted,

James M. Shepard

JAMES M. SHEPARD
DIRECTOR

THE COMMONWEALTH OF MASSACHUSETTS

DIVISION OF FISHERIES AND GAME

One Hundred and First Annual Report

July 1, 1965 - - - - - - - - - - - - June 30, 1966

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Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent

800-1-67-944217 Estimated Cost Per Copy: $.71

FISHERIES AND GAME BOARD

The One Hundred and First Annual Report of the Division of Fisheries and Game is significant, not only because it marks the start of the second century of public service by this agency, but also because it marks a crossroads at which revolutionary and basic decisions of great importance must be made.

Experience has demonstrated emphatically that the general public, other than those who hunt, fish or trap, benefits directly for services provided by the Division of Fisheries and Game. At this time the general public does not contribute financially to support of these services.

Today the Division of Fisheries and Game is faced with greater public demand for additional services, higher costs of existing services, and a narrowing financial base. The Board has no plans to ask sportsmen, who now almost entirely support this division, for additional funds. It feels, rather, that the time has now come (indeed it may even be past due) when General Fund monies in sizeable proportions must be allocated to this division.

Hunting and fishing in Massachusetts are important attractions to our 500-million dollar tourist industry. In excess of $100 million dollars a year is spent by those who hunt and fish in the Commonwealth, a significant contribution to businesses of many kinds. Providing places to hunt and fish, watch or otherwise enjoy wildlife, is the responsibility of the Division of Fisheries and Game. A recent study of public usage of several division areas indicated numerous ways in which people enjoy the areas in addition to hunting and fishing. It is decidedly unfair that license fees alone have to bear the brunt of the cost of providing and managing such areas.

During the past year the Board and staff of the division worked tirelessly to attempt a solution to this problem. Believing that the division would receive matching monies from the General Fund, the sportsmen of Massachusetts willingly accepted a $1.00 increase in the cost of licenses, with the provision that this would be earmarked by legislation for land acquisition and equalled by a matching appropriation from tax funds. This was not achieved. Instead, it appears that legislation will earmark in an indirect fashion only a portion of this increase, and will provide only a token matching. Further, it appears that legislation will provide funds from a two-million dollar bond issue, to include construction of a Quabbin fish hatchery and acquisition of land for outdoor recreation, to be entirely repaid from the sportsmen's license money in ten years.

While this is a step in the right direction, and certainly represents progress, again it is wrong that the sportsmen alone must pay for practically the entire program while all the public benefits.

If the Division of Fisheries and Game is to continue present services, and provide the additional services required in the future, it is imperative that additional financing be obtained from the General Fund as is now the case in many other states.

At any rate, the Board will fulfill its own pledge to the sportsmen, to spend the $1.00 increase in license fees only on acquisition of land. This may not mean all income received in any one year will be spent in that year, but over a period of years, as purchases can be carried out, amounts equal to this will be requested in the budget. The staff, in preparing their individual budgets, has been instructed to delete revenue from the license-fee increase entirely from their planning except for the specific purposes of land and water acquisition.

Highlights of the past fiscal year were many. Of minor significance perhaps, but a step forward in terms of working facilities, the new quarters in the State Office Build-

ing have proved a blessing.

Winter survival and poult production of wild turkey introductions in central Massachusetts was approximately double that of previous years, as were the introductions in Mount Washington. Other plants, however, have only remained stable.

Pheasant production at the game farms again was high, with 56,409 cocks and 11,430 hens being released. Production was excellent at fish hatcheries, despite low water conditions, with 1,365,109 brown, brook and rainbow trout being distributed. An additional 29,293 trout were received from federal hatcheries. In addition, 10,118 landlocked salmon were released in Quabbin Reservoir, and 56,448 Atlantic salmon fry were obtained. These latter fish will be reared and stocked in Quabbin as fingerlings.

The realty section completed its first full year as a staff section of the Division. More acreage was acquired, the time span between option and purchase was reduced, and concentration of all acquisition activities in one section strengthened the operating structure of the Division.

Among acquisitions during the year were the gift of 265 acres on the Squannacook River from the Middlesex County League of Sportsmen's Clubs, purchase of three additional tracts on the same river by the Division, purchase of a tract of 170 acres on the Quaboag River, purchase of an access area on Sandy Pond, Plymouth, purchase of additions to the Swift River area, Phillipston-Petersham area, Little River in Huntington, West Meadows area, Lawrence Brook in Royalston and the northeast district headquarters area, and a gift of land in Templeton.

We invite you to read carefully the more detailed reports contained herein of each program of the Division of Fisheries and Game.

Mr. Harry Darling of East Bridgewater and Mr. Henry Colombo of Ashland were respectively elected Chairman and Secretary at the meeting on May 31, 1966. Mr. Henry Colombo was sworn in as a member of the Fisheries and Game Board by Governor Volpe on May 17, 1966.

The Board expresses its sincere appreciation to all personnel of the division for their continued exemplary performance, and wishes also to express its sincere appreciation to the Governor, Executive Council, General Court, and to those other departments, agencies, members of public information media and the public who have assisted and supported our programs in the past year.

Respectfully submitted,
Harry C. Darling, Chairman
Henry J. Colombo, Secretary
Edward J. Tierney
F. Stanley Mikelk
Martin H. Burns

ANNUAL REPORT
FISHERIES PROGRAM

INTRODUCTION

During the 1965-1966 year, the fisheries section conducted research and management activities, operating with revenue from license sales and outside monies for federal-aid projects. Continuing projects include the Qaubbin Reservoir Investigations, creel census projects, Water Quality Survey and a development project designed to increase fisherman access to lakes and streams. A new federal-aid project was initiated to establish a more equitable distribution of trout throughout the state. Warm-water fisheries research was intensified and a workshop was held at Westboro to discuss problems inherent in warm-water fisheries management.

Quabbin Reservoir Investigations

The twelfth year of study at Quabbin Reservoir was completed. Creel census agents interviewed 9,979 fishermen from April to October. During this period, a total of 75,658 fish were caught having a total weight of 65,565 pounds. A significant change in lake trout harvest was noted as naturally reproduced fish increased the harvest to over five times the number harvested the preceeding year. Future harvest should maintain this level of fishing, as population sampling indicates a burgeoning population of undersize trout.

Sampling of test coves was conducted to determine species composition which contribute to the fishery primarily as forage fish.

Life history studies were continued to determine age and growth, food habits, parasitism and other population characteristics.

The success of landlocked salmon, introduced in 1965, was studied. Indications are that the survival was high. However, continued surveillance is necessary to determine the rate of survival and to conduct life history studies. As part of a continuing program to establish this species, 10,118 landlocked salmon were released. A total of 56,448 Atlantic salmon fry were received from the Province of Quebec, Canada. These fish, reared at the Sutton Hatchery, will be released into the reservoir during the fall.

Harvest Studies on Managed Ponds

The creel census agent interviewed 956 anglers during the fishing season on four reclaimed trout ponds totaling 291 surface acres. Expanded seasonal pressure and harvest estimates indicate 5,142 anglers harvested 3,864.15 pounds of trout. The Cliff Pond creel census indicated that total angler pressure amounted to 79.1 hours with a harvest of 13.0 pounds per acre. Indications are that plants of large-sized fingerlings in a reclaimed situation seem to be economically and biologically justified.

Reclamations

Eleven ponds with a total surface area of 225 acres were reclaimed under a continuing restoration program. Ten ponds were restocked with chain pickerel or largemouth bass. One pond was suitable for trout and was restocked with yearling and adult brook and rainbow trout.

Pond Reclamations

Pond	Town	Acres	Pounds/Acre
Ezekial Pond	Plymouth	36	69.9
Flax Pond	Bourne	22	114.9
Long Pond	Wellfleet	34	58.7
Rocky Pond	Plymouth	20	110.1
Garrett Pond	Barnstable	24	23.4
Nonesuch Pond	Natick-Weston	40	152.4
Jordan Pond	Shrewsbury	20	328.62
Dean Pond	Upton	4	61.4
Big Hog Pond	Barnstable	10	16.1
Rafe Pond	Brewster	10	-----
Pickerel Pond	Plymouth	10	11.7

Pre-impoundment studies of the middle branch of the Westfield River indicated that the game fish population was exceedingly low and growth was slow. Sampling revealed that an overpopulation of trash fish was present. The completion of a water control dam induced the need for reclamation at this time. A total of 123.8 miles of stream of the middle branch and its tributaries were reclaimed which included approximately 100 acres of water. Helicopter spraying was conducted on beaver impoundments and areas inaccessible by road. After reclamation, the stream was restocked with brook, brown and rainbow trout.

Water Quality Survey

The state-wide project to determine the reasons for variances in the productivity of fresh-water ponds was continued. Analysis of 126 selected waters was undertaken to determine seasonal variations of chemical constituents. Statistical evaluation indicated that a wide difference in chemical properties does occur.

Plans for research into the biochemical relationship between fish and their environment are being formulated. Additional complex equipment such as an infra-red spectrophotometer for precise measurements of important dissolved compounds will aid project personnel to determine limiting factors to stocking success and may increase our knowledge of factors which limit carrying capacity of our ponds.

Connecticut River Studies

The second of three years of harvest and population studies was carried out on the Connecticut River, concentrating on the segment of the stream between Turner's Falls and Holyoke and including the Oxbow at Northampton. Visits were made to the river at least once per week throughout an entire year of fishing to count and interview anglers. Samples of fish populations were taken by electro-fishing and netting. Integration of localized segmental studies with overall pressure and harvest was accomplished by weekly aerial counts of anglers along the entire length of the river within Massachusetts boundaries.

Warm-Water Fisheries Research

Recent surveys of natural waters indicate that 75% of our ponds are suitable for warm-water fish such as bass and chain pickerel. Management techniques applied in past years have met with limited success. Records of 95 ponds in which some of the techniques were applied were reviewed as historical data. Fish samples were collected from 68 ponds to determine the effectiveness of previous corrective measures. In conjunction with total reclamation, sampling indicated that recontamination of these ponds occurred within a short period of time after management and that after five years, little improvement was noted in game fish populations.

Six thousand landlocked alewives were introduced in the Congamond Lakes, Southwick, in an attempt to establish this variety in Massachusetts. This special breed of alewive should produce adequate spawn each year, insuring a readily available supply of forage fish.

A two-day workshop was held at Westboro to determine the extent of warm-water management in the northeast. Representatives of the states from Maine to West Virginia, the Bureau of Sport Fisheries and Wildlife and the Soil Conservation Service were present to discuss the problems involved in greater utilization of our warm-water fisheries.

Trout Allocation

Investigations of past stocking activities indicated that distribution of trout was based to a large extent upon tradition. This project was initiated to alleviate inequities that may be present in the present system.

A review of practices both in this state and elsewhere, coupled with a questionnaire sent to other states, was conducted and proved useful in providing guidelines for the establishment of a distribution formula. This formula will place the distribution of trout on a sound biological and economic basis.

Plans were formulated to investigate and classify waters throughout the state to assure equitable and economic allocation of trout.

Trout Stream Access

Dwindling access to many good trout streams necessitated the initiation of a program to provide anglers with opportunities to fish. Three sites selected are within flood control areas usable for fish and game purposes under 25-year licenses. A fourth site, the Swift River, is owned by this Division. The areas are being developed with the construction of new gravel-topped roads, parking lots, opening of abandoned roads and the opening of streamside foot trails and "fishability" clearings. Information signs were constructed and posted, and red pine trees were planted to delimit state-owned property. Areas formerly unavailable to fishermen are now being opened, and hatchery vehicles are able to release trout in promising locations that were recently inaccessible.

District Activities

Care and maintenance of two culture pond systems was continued. The stocking of trout and warm-water fish was also carried out. Maintenance of public fishing areas and habitat improvement were intensified under a federal-aid program.

Population sampling was conducted on 68 ponds as an evaluation of past management practices. Eleven reclamations of warm-water ponds to evaluate these practices were completed. These ponds were restocked with fish from the culture system.

District personnel investigated fish kills, advised sportsmen's groups in fish pond management, maintained exhibits in cooperation with sportsmen's groups to increase interest in conservation, cooperated with federal agencies on surveys involving interstate waters and cooperated with other state agencies toward the establishment of additional access sites.

The Harold Parker State Forest Pond System in North Andover, cared for by the northeast district, yielded 1,808.2 pounds of large-mouth bass and 357.3 pounds of smallmouth bass. The Merrill Pond System in Sutton managed by the central district produced 278 pounds of largemouth bass and 290 pounds of chain pickerel. All were used in public waters.

Pesticides Laboratory

During the past year the Massachusetts Division of Fisheries and Game, in cooperation with the Massachusetts Health Research Institute and the United States Department of Health, Education and Welfare, continued a state-wide monitoring program aimed at a constant evaluation of pesticide residues in the waters of the Commonwealth. During this period over 495 fishes collected from 119 watershed stations were analyzed for chlorinated hydrocarbons.

Massachusetts Cooperative Fishery Unit

In conjunction with the Division of Fisheries and Game, the University of Massachusetts has continued research on the Connecticut River, Quabbin Reservoir and small artificial ponds. In addition, projects were initiated to increase the scope of the present Connecticut River studies and to investigate the ecology of warm-water ponds.

The Connecticut River survey is designed to study the types of bottom material and the invertebrate organisms associated with them. A total of eight families of insects and seven groups of other invertebrates were identified. Quantitative results indicate that rubble harbors the most species of bottom organisms followed by muck, gravel and sand.

Studies were continued on the composition and distribution of fish species in the river. Thirty-one species were captured and examined which included white sucker, black crappie, white perch, white crappie and walleye pike. A few brown and brook trout were also sampled.

New research projects initiated include a study of the feeding habits of game fish species in the river, and an investigation of the ecology of the American shad, with an attempt to locate spawning sites. These projects are coordinated with the Division of Fisheries and Game biological sampling and creel census work.

At Quabbin, life history studies were continued on white perch and rock bass with emphasis placed on age and growth, reproduction, food habits, fecundity and parasitism. These studies are coordinated with investigations conducted by the Division.

In coordination with the Division, a warm-water research study has been initiated with three areas being selected for extensive biological and chemical investigations.

Allied studies with the Water Resources Research Center are being conducted which include a survey of small artificial recreational ponds and the biological condition of these impoundments.

Trout Propagation

State and Federal Hatchery Production

A grand total of 1,365,109 brook, brown and rainbow trout weighing 319,477 pounds were distributed in Massachusetts public waters last year.

Production of the five state hatcheries totalled 1,365,109 trout weighing 290,194 pounds. The total number of catchables (six inches or over) was 914,693. In addition, 10,118 landlocked salmon were released in the Quabbin in the fall of 1965.

State hatchery releases were supplemented by 29,293 trout weighing 29,283 pounds received from five federal hatcheries.

Water Resources

Continuation of drought conditions affected the water resources at our hatchery installations. Reduced water flows with a subsequent drop in oxygen content was noticeable. However, emergency expenditures for electric power and the purchase of pumps and aerators made it possible for our fish culturists to attain a normal liberation of fish for the stocking programs.

Nutritional Research

The feeding research program was confined to pelleted fish food. Data acquired indicate a relationship between the dissolved oxygen levels in the water, food conversion and growth. Statistical analysis of the results and the charting of growth levels are pending.

Fertility and Coloration

Research feeding to evaluate the effects of both regular and defatted paprika on fertility and growth in yearling brown trout was continued. Additional research is necessary to evaluate the fertility of the test fish. These animals have been maintained on the same brand of pelleted food more than two years. The tests indicate that other brands have failed to sustain the fish in a healthy condition over two years.

A coordinate study with the Agricultural Section of the University of Massachusetts has advanced our understanding of vitamin A and its relation to fish nutrition.

Salmon Rearing

During the year, 56,448 salmon fry were received from the Province of Quebec for rearing at the Sutton Hatchery. Plans are to release these fish as three-to five-inch fingerlings in the fall of 1966.

Construction

The Montague Hatchery cleaned up reforested areas to reduce forest fire hazzards and made repairs to maintain existing structures.

The Palmer Hatchery reconstructed several rearing pools with lumber and concrete. Clearing of underbrush to reduce fire hazards was also accomplished.

The Sandwich Hatchery completed construction of six cement ponds and the immediate area was graveled ready for blacktop.

Several new two-inch wells were driven to provide adequate water supply for increased rearing facilities.

The 20 pond unit at East Sandwich on the west side was repaired.

Banks were cleared in preparation for the construction of a double series of eight cement raceways with feed lines.

Water exploitation work was undertaken for the installation of a new gravel packed well. Piping from this well will interconnect with existing pipes providing a source of water to all sections of the hatchery during emergencies.

The Sunderland Hatchery extended electrical lines for pumps and aerators. Repairs were made to existing ponds and buildings.

Several well points were installed at the Podick station in an effort to increase the water supply. Lumber was salvaged and plastic shelters were made available to advance rearing schedules.

Equipment

Two new distribution trucks were purchased. Eleven electric aerators, six electric, two-inch water pumps and nine gasoline water pumps were purchased to relieve shortage conditions. Many other pumps were purchased for use on distribution trucks.

Trout Distributions from State and Federal Hatcheries
July 1, 1965 to June 30, 1966

BROOKS		BROWNS		RAINBOWS		
Under 6"	Over 6"	Under 6"	Over 6"	Under 6"	Over 6"	TOTAL
210,450	432,577	93,200	264,290	146,766	217,826	1,365,109

Total Trout Distributed	6-9"	486,358	
Total Trout Distributed	9"	287,784	
Total Federal Trout Dist.	6" plus	140,551	
Total Catchables (6" plus)			914,693
Total Fingerlings 6" minus			450,416
	GRAND TOTAL		1,365,109

STATION POUNDAGE

Berkshire Hatchery	13,673	
Montague Hatchery	70,583	
Palmer Hatchery	41,196	
Sandwich Hatchery	85,483	
Sunderland Hatchery	54,988	
Sutton Hatchery	24,271	
STATE POUNDAGE		290,194
North Attleboro	16,658	
Pittsford Vermont	2,897	
Nashua, N. H.	8,812	
Bowden, W. Virginia	778	
Berlin, N. H.	138	
FEDERAL POUNDAGE		29,283
GRAND TOTAL		319,477

(This table does not show trout retained for Brood Stock)

GAME PROGRAM

Highlights of the game program were centered around both wildlife research and management of white-tailed deer and waterfowl, and development of state-owned lands for public hunting.

The wildlife research and management activities were financed by monies derived from the sale of licenses and Federal Aid (Pittman-Robertson) funds.

A summary of the year's work by Federal-Aid projects follows:

W-9-D

The majority of the game section's time and effort is spent on this project to develop our wildlife management areas for public hunting. Such an objective requires a great diversity of work programs: construction and maintenance of dams, dikes, roads and buildings; posting area boundaries; planting wildlife trees and shrubs; planting annuals and perennials for wildlife food and cover in spring and fall; thinning and clearing woodlands; controlling undesirable plant species; encouraging natural fruiting species; and maintaining wood duck nesting boxes. On the Westboro Beagle Training Area, woodland cuttings and the planting of legumes, etc. are annual management activities.

The management and development of the Myles Standish State Forest Wildlife Management Area was greatly accelerated by temporarily transferring game farm personnel during the winter months. Work on this highly important public hunting ground in southeastern Massachusetts during the past fiscal year resulted in the development of 2.5 miles of new access roads; 12 new hunter parking lots; brush cutting of 280 acres of land; clearing of 70 acres of land by use of a Rome harrow; and planting and maintenance of 49 acres of wildlife food patches.

Approximately 40,000 board feet of lumber were salvaged from thinnings and cuttings at the Birch Hill area.

W-35-R

Massachusetts' wild turkey restoration project was initiated in 1960. Twenty-two wild turkeys from three different stock types were released in Quabbin Reservation between 1960 and 1961. Successful reproduction has occurred during most years, but winter losses and high poult mortality during some years have offset population growth so that spring populations have remained relatively static. In April, 1965, 21 turkeys were present in the Quabbin area, the highest spring population since the project's initiation. A winter feeding program during the 1964-1965 winter was thought to be partly responsible for high over-winter turkey survival. Nesting success was high during 1965, but poult mortality limited high juvenile recruitment. However, the fall population numbered approximately 54 turkeys. Mild winter conditions and artificial winter feeding were probably responsible for the over-winter survival of a minimum of 39 turkeys by April, 1966. (This figure does not include 11 turkeys moved to the Holyoke Range.)

A transplant of wild turkeys from the Quabbin area to the Holyoke Range in 1964 was unsuccessful in establishing a population. Another release of 11 turkeys was made in November, 1965. One juvenile tom was lost during the winter. Ten turkeys were present in April, 1966.

At October Mountain State Forest in Washington, 29 turkeys were released during 1961 and 1962. Eleven turkeys were released in 1961 at Mount Washington. Static populations have persisted at both locations. At October Mountain, a minimum of 12 turkeys were present in April, 1965. At least two broods were produced but poult survival was

very low. Sixteen wild turkeys may have been present by September. Local residents fed at least seven during the winter. An estimated ten to twelve birds were present in April, 1966. At Mount Washington, 15 turkeys were present in April, 1965. At least four broods were produced. A minimum of 30 birds were reported present in September. Some artificial food was provided for the turkeys and a local resident reportedly fed them during the winter. Twenty-seven wild turkeys were reported present in April, 1966.

Reports indicated a number of wild turkeys were seen in the Ashfield-Conway area. Tracks of two toms were located in January, 1966 at Ashfield. The origin of these birds was unknown.

Poult mortality was at least 50 percent during 1965. The primary causes of mortality were not determined but some data were collected. A juvenile tom severely parasitized by Capilleria sp. was captured, and several turkey droppings that contained Ascaridia sp. were collected in January, 1966.

Data gathered by direct observation indicated wild turkey broods frequented openings and fields during the summer. Most hens with broods moved to New Salem following hatching on the Prescott Peninsula where they constantly used grassy fields and pastured areas until September. Some information on food habits of broods during the summer of 1965 was obtained by observations.

A winter feeding program started during the 1964-1965 winter was continued. Cob corn in wire basket feeders was provided for wild turkeys at New Salem during the 1965-1966 winter. Some corn was made available to turkeys in western Massachusetts but most birds were sustained on artificial foods provided by local residents. Mild winter conditions and winter feeding were probably responsible for high over-winter survival of turkeys in the Quabbin area and at the western release sites.

Thirty-six wild turkeys were live-trapped, wing-tagged and banded between June, 1965 and February, 1966 in the Quabbin area. Eleven were transplanted to the Holyoke Range, the others released at the trap site. Population studies are facilitated by having marked birds in the population.

Wood Duck Production and Survival Studies

A live trapping and banding program was carried out at Great Meadows Refuge in Concord from July 14 to September 28, 1965. The purpose of this study was to trace the survival of wood ducks which had been tagged at hatching in nesting boxes on the refuge. However, the trapping program was severely hampered by the depredations of a group of otter which had escaped from a nearby estate. Only 19 percent of the tagged ducklings were recaptured and traced to flight stage.

The tagging program allows the exact age of the ducklings to be determined at the time of recapture. A comparison of the growth rate and development of these known-age immature wood ducks was made with a standard table of development prepared during a previous study (1952-1954) on Great Meadows Refuge. This comparison has shown that the ducklings on this study area have been retarded in their growth and development during the past three years when compared with the previous standard. There is evidence that changes in the habitat have caused a lack of readily available insect food which might be responsible for the stunted growth and poor survival of ducklings at Great Meadows.

In the spring of 1966, incubating females were again banded in the nesting boxes. The preponderance of aged females and the scarcity of first-year birds, which latter

should make up half the population, indicates the poor recruitment to the resident breeding stock. However, production was good this year and the number of ducklings hatched was the largest since 1958.

A similar study was initiated of the wood duck population at the Greenough estate in Carlisle. The record of production and survival of birds from this area will be compared with the data from Great Meadows. Over 500 ducklings were web tagged at hatching in 1966 and will provide the basis for the evaluation of the survival rate at both of these breeding areas.

A monograph entitled "The Wood Duck in Massachusetts" by David Grice and John P. Rogers has been published by the division and is now available for limited distribution.

Aerial Census of Waterfowl

The winter inventory was flown between January 4 and January 10, 1966. The flight covered the coastline from New Hampshire to Rhode Island and the islands of Martha's Vineyard and Nantucket. The total count was 96,300 ducks and geese, 27 percent less than in 1965 and four percent less than the ten-year average (1957-1966). Black ducks (22,400) were down 31 percent from 1965 and eight percent from the ten-year average. Diving bay ducks including scaup, golden-eye and bufflehead (31,500) were ten percent higher than both the 1965 count and the ten-year average. Other diving ducks including scoters, eiders and old squaws (34,000) were down 46 percent below 1965 and 17 percent below the ten-year average. Canada geese (7,800) were three percent below 1965 but 22 percent above the ten-year average.

Five flights were made from October 13 to December 20 to make a periodic inventory of scoters, eiders and old squaws along the New Hampshire and Massachusetts coast. There was a build-up as follows during the census period: Scoters from 2,700 to 33,700; eiders from 8,100 to 97,900; old squaw from 0 to 300.

Hunters using boats and decoys were counted to determine hunting pressure. Only ten rigs were observed during approximately 40 hours of flying.

Winter Banding of Black Ducks

The winter banding program was undertaken at the request of the U. S. Fish and Wildlife Service to provide a banded sample of the wintering black duck population in the Northeast coastal region. A special experimental late black duck season is under consideration and a banded sample of this population would aid in evaluating the efforts of such a season.

Personnel working for the Massachusetts Division of Fisheries and Game banded a total of 1,824 ducks at coastal stations during the period December 21, 1965 to March 18, 1966. Together with the banding conducted by the U. S. Fish and Wildlife Service in the Newburyport area, this exceeded the quota of 3,000 newly banded birds requested for Massachusetts coastal stations.

Banding under state auspices included 691 birds in Boston Harbor and 1,133 in the Cape Cod area. The great majority were black ducks (1,658), but 97 mallards were banded as were 69 black-mallard hybrids. In addition, 28 birds were captured that were already carrying bands from other stations.

Most of the birds were taken in standard wire bait traps using whole corn as bait. The lack of a prolonged period of severe cold during the past winter permitted mussel

beds to remain accessible to ducks throughout the trapping period. For this reason, the birds remained in relatively good condition throughout the winter and the corn did not prove as attractive as would be expected under more severe conditions.

Limited use of a cannon net was employed to capture 142 birds for banding. The ratio of repeats captured by the cannon net was lower than was the case with wire traps. If the winter trapping program is continued, expanded use of the cannon net is contemplated.

Waterfowl Wing Session

For the third consecutive year, the waterfowl project leader assisted at a wing session held at the Patuxent Research Station in Laurel, Maryland. Over 20,000 duck wings sent in by waterfowl hunters in the Atlantic Flyway each year are identified, sexed and aged by technicians working at these stations. The data gathered from this wing sample are analyzed and used in setting the waterfowl regulations in this flyway.

A sample collection of waterfowl wings was brought back and presented to wildlife students at the University of Massachusetts during a seminar of sexing and aging techniques.

Deer Project

During the 1965 deer season, hunters reported taking 2,242 deer. Of these, 1,181 were males and 1,024 were females. No sex was reported for 37 deer. The sex ratio of the 1965 deer kill was 115 males to 100 females. This is a reversal of the 1964 kill ratio.

Shotgun hunters killed 2,231 deer during the six-day season, December 6 through December 11, 1965 (1,170 bucks; 1,024 does and 37 of sex unreported). Archers shot eleven bucks during the archery season November 8 through November 20.

Hunters neglected to report the location of 500 deer kills.

Deer project personnel are in the process of plotting 3,955,192 acres of deer range on cover maps.

The Division of Fisheries and Game and the Division of Law Enforcement have initiated a system of recording deer mortalities. To date, the cause of the highest known deer mortality, other than by hunting, is the motor vehicle (roughly 60 percent). Deer killed by dogs averages around 24 percent, with the remaining 16 percent of the kills caused by illegal shooting (jacking), crop damage kills, unknown and miscellaneous causes.

The general health and weights of our Massachusetts deer appear to be excellent as observed at deer checking stations and during the collection of road kills.

Although the concensus was that the hunting pressure during the 1965 season was not as heavy as in previous years, it was estimated that between 48,000 and 50,000 hunters took to the woods in search of deer during the 1965 season.

Using the 1965 reported deer kill figure of 2,242 deer, it is estimated that the minimal prehunting season deer population ranged between 8,500 and 10,500 deer.

Statistical analysis of the deer data for a fifteen-year period indicates an overshooting of the female segment of the deer population. The data indicate a history of

overharvest of females followed by a number of years of herd-size recovery. During the middle 1950's, the female segment was overharvested for four years in a row and to date the herd size has not recovered.

Utilization of Wildlife Management Areas

The objectives of this study are as follows:

1. To determine the hunting pressure on wildlife management areas.
2. To determine the nature and extent of multiple use of wildlife management areas by the general public.

A summary of the findings regarding hunter usage of these areas revealed that the total estimated usage of thirteen such areas was 49,428 hunter trips in 1965. This was 14 percent higher than an average of previous years. Peak usage was reported on the second Saturday followed by the first Saturday, opening day (Wednesday) and the succeeding Saturdays after the second. Average weekday usage was about 19 percent of Saturday usage. Weekday hunting was noticeably heavier after a stocking showing that hunters anticipated the stocking schedule. Local hunters still utilize the areas to the greatest degree. A large number of hunters were willing to travel over 50 miles for their sport and generally were the best equipped.

A summary of the findings regarding multiple use of the division's wildlife management areas is as follows:

Multiple use activities reported outside of the hunting season are: camping, field trials, dog training, fishing, berry picking, bird watching, sight-seeing, parking, education, target shooting, horseback riding, ice skating. Total days of usage were not recorded. Each area was rated in the categories of extensive, moderate, occasional or no usage.

NON-FEDERAL AID PROJECTS

Grouse Trapping and Transfer Project

During the past several decades, Martha's Vineyard Island woodland areas have developed into potential ruffed grouse habitat. Since ruffed grouse are non-existent on Martha's Vineyard, seven or eight grouse were live-trapped and transferred to this island two years ago, but without success due to various factors. Therefore, during the past winter, an exerted effort was made to live-trap and transfer as many ruffed grouse as possible from areas closed to hunting. The final results reveal that 28 grouse were released on Martha's Vineyard.

Early summer observations indicate that survival was excellent and at least one brood was noted.

Sexing Day-old Pheasants by Down Color

Working in cooperation with the Massachusetts Cooperative Wildlife Research Unit, the game section is attempting to develop a technique of sexing day-old pheasants by down coloration, making use of sex linkage found in some pheasant types.

In Massachusetts, only male pheasants are legal game. Hens are protected because it has been shown that 40 to 60 percent of the annual pheasant kill is derived from natural reproduction. Therefore, the Division of Fisheries and Game stocks only cock pheasants for the hunting season.

Annual game farm production is 55,000 to 57,000 cock pheasants. At present, day-old chicks are sexed by eye down markings. This technique, however, has resulted in a large number of birds being mis-sexed. One hundred percent true sex determination can be made only after the pheasants are five to six weeks of age, but holding the birds this long results in considerable expense which the division would like to eliminate.

After true sex determination has been made, the Division must rear the hens to at least twelve weeks of age in order to assure a minimum survival after release in the wild. In addition to feed costs, there are labor costs and the necessity for providing valuable pen space. A more efficient technique is needed which will allow game farm personnel to readily separate day-old pheasant hens from cocks.

Project results to date have been gratifying. However, it should be noted that it may be several years before the technique will be fully developed.

White Hare

The Division of Fisheries and Game purchased, tagged and released 2,500 varying hare in 1965. Division personnel who released the hare reported them in good condition. It is felt that the handling and shipping stipulations required by the division resulted in livelier and healthier conditioned animals than in previous years. The handling and shipping stipulations are the results of research conducted by this division.

All hare released by the division have a red metal tag attached to the ear. Hunters and other interested sportsmen are requested to return these to division Field Headquarters in Westboro. Tag returns for the 2,500 hare released during the 1965 season totaled 78 tags, a three (3) percent return.

For the 1966 season, hare release of 2,500, the tag returns to date are 33 tags or one (1) percent.

The greatest number of tag data is compiled for hare released during the open gunning season (between January 1 and February 5.). To date, the tag data indicate that the carryover of hare is minimal.

Cottontail Rabbit

The cottontail rabbit population appears to be holding at a high level. Beaglers and rabbit hunters can look forward to a good season.

Miscellaneous

Miscellaneous activities of the Game Section included distributing game investigating and trapping beaver, tagging beaver pelts, providing landowners with technical advice, investigating Hatch Act applications and aiding in writing town natural resources reports.

GAME FARMS

Game farm production was greatly hindered this past year by disease and drought conditions. Uncontrollable disease problems at two of the game farms are being investigated by the Massachusetts Cooperative Wildlife Research Unit. Change of brood stock and diet may provide solutions to this problem. For more details, see the Massachusetts Cooperative Wildlife Research Unit report.

Pheasant pens, electrical installations and buildings continued to require year-round construction and maintenance work at all game farms.

As an economy measure, all brood stock were held at the Wilbraham and Sandwich game farms. These farms also furnished the Ayer Game Farm with both day-old and six-week-old pheasants for rearing purposes.

To streamline pheasant distribution, several thousand 12-14-week-old pheasants were shipped from the Wilbraham and Sandwich game farms to the centrally-located Ayer game farm for rearing.

1965 - 66 TRAPPING SEASON, FUR HARVEST & VALUE

SPECIES	NO. TAKEN	AVE. PRICE	VALUE
Muskrat	33,960	$ 1.75	$ 59,430.00
Mink	1,058	9.00	9,522.00
Otter	59	22.00	1,298.00
Skunk	40	.50	20.00
Raccoon	1,698	3.00	5,094.00
Weasel	65	.50	32.50
Red Fox	75	9.00	675.00
Grey Fox	33	2.50	82.50
Beaver	1,445	17.00	24,599.00
Bob-cat	unknown		
Opposum	unknown		
		Total Value	$100,753.00

GAME DISTRIBUTION

July 1, 1965 - June 30, 1966

Pheasant		Hens	Cocks	Total
Adult:	Spring and summer liberations	5,597	856	6,453
Young:	August liberations (12 weeks)	4,272	4,000	8,272
	October-November liberations (17-15 weeks)	175	43,057	43,232
	Sportsmen's Club Rearing Program*	1,386	8,496	9,882
Totals		11,430	56,409	67,839

Quail	
Adult:	209
Young:	3,115
Totals	3,324

White Hare	
Northern Varying, purchased	2,500

*Includes June 1966 distribution to clubs (125 hens; 1,676 cocks)

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

Wild Turkeys

Winter survival and reproduction of wild turkeys in central Massachusetts was approximately double* from the previous year. After six years of relatively stable numbers of survivors and poults, the birds now seem to have increased significantly and some have spread beyond the Quabbin area. The success of a plant of 11 turkeys on the Holyoke Range is still uncertain. Three of five hens accompanied by gobblers were seen near the original planting area after the breeding season. There may still be poults in the area which have not been discovered.

Eleven to 12 turkeys survived on October Mountain. No figures on reproduction are available.

As in the central part of the state, the turkeys in Mount Washington appear to have doubled, with an estimated population of at least 50 on August 1, 1966.

* About 100 on August 1

Pheasants

Three pheasant studies have been conducted by the Unit for the first time.

1. Caged pheasants from game farms are being studied to determine causes of mortality in game farm birds. This is a two-year study and no conclusive findings are now available.

2. Dr. Wentworth of the Unit, by cross-breeding, developed a stock of ring-necks which produce hen chicks of a light cream color whereas the cock chicks are the normal mottled color. This strain will eventually be used by all game farms, and sexing chicks successfully should approach 100 percent.

3. Twenty-six pheasants were equipped with radio transmitters and followed from daylight to dark at the Birch Hill study areas. The purpose was to study the birds' wanderings and hunter success. Previously, from band returns, it was estimated that 75 percent of the birds were shot and 3 to 5 percent died as cripples. It was found with the radio-equipped birds that heavy hunting pressure inhibited wandering. Nearly 85 percent of the birds were shot near the release site. One bird survived 11 days and another 10 days, but most lasted less than 3 days. Cripple mortality from the radio-equipped birds was about 12 percent.

Mourning Doves

A Mourning Dove study initiated several years ago was finally completed. The history of dove population in western Massachusetts and recent results indicate a high increase in the number of breeding birds and a substantial population of wintering doves. Fifteen years ago doves were relatively scarce in the area.

Bird Sterilization Studies

Dr. Wetherbee has successfully demonstrated and studied the effectiveness of Sudan Black as a sterilant to control gulls. The compound has certain limitations and new chemicals with promise are now being screened and developed.

Woodcock Book

The University of Massachusetts Press approved the manuscript of Sheldon's woodcock book for publication and it should be off the press by March 1967.

REALTY PROGRAM

The Realty Section functioned for its first full year as a separate section in the organizational setup of the division. This proved very successful as far as land and water acquisitions were concerned. More acreage was acquired, the time span between option and purchase was reduced and the concentration of all acquisition activities in one section strengthened and solidified the basic operating structure of the division.

The Realty Section was pleased to have played a small part in the preparation of the final papers which conveyed as a gift from the Middlesex County League of Sportsmen's Clubs, Inc. approximately two hundred sixty-five (265) acres of land along the Squannacook River in the Towns of Groton, Shirley and Townsend. To augment this valuable gift the division acquired three additional tracts of land along the river comprising some one hundred fifty (150) acres and at year's end negotiations were being carried on to acquire several other parcels along and adjacent to the river in an effort to establish a sizeable wildlife management area.

In the last report reference was made to the purchase of a sizeable tract along the Quaboag River as the first step in establishing a wildlife management area along the river. This year one hundred seventy (170) acres were added by purchase giving the division an acreage of approximately six hundred seventy-five (675) acres along and adjacent to the Quaboag River.

The division has long recognized the necessity of taking action to acquire access points to ponds and lakes throughout the Commonwealth which, although they possess great fishing potentials, are inaccessable as far as the public is concerned. Since this particular type of acquisition is expensive and difficult to negotiate because adequate funds are unavailable, the division has not been in a position to undertake a program of this type. However, during this fiscal year a start was made and the division acquired an access area on Sandy Pond in Plymouth. This we hope is the beginning of a program which will see many acquisitions of this type in the future.

Several acres were purchased to augment the present holdings in the Swift River Wildlife Management area and the Phillipston-Petersham area. One hundred sixty acres were added to our ownership along Little River in Huntington. Purchases were made along Lawrence Brook in Royalston, adjacent to the Birch Hill area, and in the West Meadows area. A small parcel was added to the present holdings at the Northeast district Headquarters.

The division is most grateful to Mr. L. Clifford Day of New Hampton, New Hampshire for his generosity in conveying as a gift the land owned by him in the town of Templeton. We are sure that Mr. Day could have sold his property at a handsome profit. Yet because of his life long interest in wildlife and forestry and his desire to see areas set aside to remain open and undeveloped for the use and enjoyment of generations to come he chose to forsake any monetary profits and place his property under the care and protection of the division. If we are to succeed in our efforts to provide open areas for public enjoyment and recreation we must have more men and women of Mr. Day's character and calibre come forward and give us a helping hand.

During the year our engineer aided in preparing plans and specifications for all construction prospects undertaken by the division, and made surveys and partial surveys to establish and clarify line locations on several of our properties. He also investigated and prepared the necessary reports of proposed acquisitions for the evaluation and consideration by the Realty Committee and prepared plans of several parcels for recording.

The Realty Section is most grateful to the district managers and district personnel for their complete cooperation. Their willingness to spend endless hours making contacts, obtaining the necessary information to complete transactions and assisting in every way they could has resulted in the division now being in a position to make sizeable acquisitions of necessary land and water in the future. In fact, the Realty Section expresses its sincere thanks to all personnel in the division for their help and cooperation. The procedures necessary to acquire properties are many times dull and uninteresting to personnel whose primary interest is wildlife management yet the cooperation of everyone was above criticism.

INFORMATION AND EDUCATION PROGRAM

The information and education program continued in its 18th year of operation, spearheaded by the Information and Education Section and assisted by personnel throughout the division.

The primary purpose of this program is to develop and maintain a state of public concern and effective action on behalf of natural resources. That this does have effect is attested to by the current surge of concern over many aspects of natural resource management, particularly in the area of pollution. This program actively began efforts to arouse concern over pollution in the fifties; today there is promise that effective action is on the horizon. Similar results have been experienced in the fight against unwise use of pesticides. The information program, which deals with public attitudes, relies heavily upon factual information furnished it by research and management personnel. It also relies heavily upon personnel in the field who meet and talk with members of the public, opinion leaders and other influential persons. It relies most heavily, of course, upon public information media through which its message is transmitted. Activities in the area of mass-media, (a requirement before other informational efforts can hope to be effective), are reported herein.

News Services

A total of 158 separate news stories were distributed to media as follows:

I & E Section news releases: 106
I & E Section television news films: 28
District news releases: 24

A total of 3,015 newsclips were received, an increase of 177 over last year.

Continued personal contact with press personnel by I & E and others resulted in 46 columns and features in addition to coverage resulting from news releases. I & E furnished pictures, information and writing assistance on numerous occasions to feature writers both in Massachusetts newspapers and national magazines. An increase in out-of-state coverage was noticeable.

MASSACHUSETTS WILDLIFE Magazine

A total of 36,121 subscribers were receiving this magazine at the close of the fiscal year. The drop from last year was the result of a year-long re-subscription process which has "cleaned" the mailing list. The re-subscription rate compares with average rates for such magazines nationally. At the present time, nearly 1000 new names are being added upon personal request only at the time of each issue. Current readership is conservatively estimated at three times the subscription figure.

Publications

"The Wood Duck in Massachusetts", 96 pages, two colors, was completed and delivered during the reporting period. The I & E Section also accomplished routine publication of the annual report, stocked waters list, fish and game law abstracts, closed town list, license forms and archery stamp.

Conservation Education

The I & E Chief continued to participate on the Massachusetts Advisory Committee for Conservation Education and the State Conservation-Education Editorial Board.

A total of 135 boys completed the Junior Conservation Camp program, which is planned and directed by the I & E Chief in cooperation with the Department of Natural Resources and Massachusetts Conservation Inc.

The I & E Chief was active in the latter part of the reporting period in cooperation with the Massachusetts Audubon Society, helping to plan a national conference of the Conservation Education Association.

Sportfish Awards Program

The third year of the sportfish awards program was completed with gold pins and plaques awarded to holders of the following record catches for calendar year 1965:

Species	Weight	Length
Largemouth Bass	9 lbs. 8 oz.	23 inches
Smallmouth Bass	5 lbs. 9 oz.	21 7/8 inches
Northern Pike	9 lbs.	34 3/4 inches
Pickerel	6 lbs. 8 oz.	28 inches
Rainbow Trout	7 lbs. 4 oz.	27 1/2 inches
Brown Trout	13 lbs. 1 oz.	31 1/2 inches
Lake Trout	12 lbs. 3 oz.	31 1/4 inches
Walleye	8 lbs. 8 oz.	28 1/2 inches
Bluegill	1 lbs.	11 1/4 inches
Bullhead	5 lbs. 8 oz.	22 1/2 inches
	4 lbs. 9 oz.	22 1/2 inches
Catfish	9 lbs. 8 oz.	25 1/2 inches
Calico	2 lbs. 9 1/2 inches	18 inches
White Perch	2 lbs. 4 oz.	16 3/4 inches
Yellow Perch	1 lbs. 12 oz.	16 1/2 inches
	1 lbs. 8 oz.	16 1/2 inches
Brook Trout	2 lbs. 4 oz.	19 inches
Shad	5 lbs. 11 oz.	23 inches
	5 lbs. 11 oz.	26 inches

Standing all-time records of January 1, 1966, are:

Species	Weight	Length
Largemouth Bass	12 lbs. 1 oz.	25 3/4 inches
Smallmouth Bass	6 lbs. 10 oz.	24 inches
Northern Pike	13 lbs. 12 oz.	38 1/2 inches
Pickerel	9 lbs. 5 oz.	
Rainbow Trout	7 lbs. 4 oz.	27 1/2 inches
Brown Trout	18 lbs. 8 oz.	
Lake Trout	13 lbs. 1 oz.	31 inches
Walleye	8 lbs. 8 oz.	28 1/2 inches
Shad	6 lbs. 13 oz.	
Bluegill	1 lbs.	11 1/4 inches
Bullhead	4 lbs. 9 oz.	22 1/2 inches
Catfish	13 lbs. 8 oz.	30 inches
Calico	2 lbs. 9 1/2 oz.	18 inches
White Perch	2 lbs. 4 oz.	16 3/4 inches
Yellow Perch	2 lbs.	16 5/8 inches
Brook Trout	2 lbs. 4 oz.	19 inches

Meetings

District personnel attended or participated in 271 meetings with sportsmen's groups, civic and fraternal association, youth and church groups, besides numerous meetings with town conservation commissions, individuals and various local groups to advise directly on wildlife management projects. I & E and other staff personnel participated in a similar number of such meetings.

Exhibits

Districts and I & E participated in 12 major exhibits during the year. A few exhibits of minor nature were also assisted.

Audio-Visual Aids

The I & E Section prepared and presented 21 half-hour "Dateline Boston" TV shows, four 15-minute "Critter Corner" shows, and appeared as a live guest on radio 21 times. A number of guest appearances by other personnel were arranged.

Approximately 45,440 viewers saw division films exclusive of television use. The 16 films in the library were booked a total of 568 times. One new film, "Water Going-Going", on pollution, was completed during the reporting period.

The usual large number of still photos for technical use were produced, as well as hundreds of prints for publicity and publications.

Special Events

The I & E Chief again served as publicity chairman for National Wildlife Week, and telephone news service was again conducted on the opening day of deer season.

Five "Show Me" tours were conducted by district personnel for groups of sportsmen, press, conservation commissions and legislators.

Miscellaneous

About 2800 "Safety Zone" posters were distributed by Districts and another 1500 by the I & E Section.

The I & E Chief served as president of the American Association for Conservation Information, the international professional association of conservation information personnel, throughout the year.

The public information campaign conducted to establish flourescent orange as a safety color for deer hunting received a first-place award as the "outstanding public information campaign nationally." The award was presented in June by the American Association for Conservation Information.

While it did not receive an award in the same competition, MASSACHUSETTS WILDLIFE magazine was rated "well above average", receiving 200 of a possible 240 points for "fulfillment of conservation purpose." Not receiving a high award was understandable - the magazine was in competition with 45 others, most of which expend far greater budgets on color printing, etc.

GENERAL ADMINISTRATION

HOW THE SPORTSMAN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	3304-01	$106,405.34		
Fish & Game Board	3304-01	941.00	107,346.34	7%
Information-Education	3304-01		78,022.24	5%
FISHERIES MANAGEMENT				
Fish Hatcheries	3304-42		311,299.74	21%
Management	3304-42	115,859.55		
*Fish Restoration Projects	3304-47	39,351.91		
Management	3304-51	85,480.43		
Fisheries Research Coop. Unit	3304-55	10,000.00	250,691.89	17%
WILDLIFE MANAGEMENT				
Game Farms	3304-51		259,340.92	18%
Management	3304-51	85,480.44		
*Damage by Wild Deer & Moose	3304-41	5,214.50		
Wildlife Research Coop. Unit	3304-44	9,188.94		
*Wildlife Research Restoration	3304-53	128,868.31	228,752.19	16%
LAND ACQUISITION				
	*3304-47	11,078.00		
	3304-48	32,900.00		
	3304-52	29,900.00		
	*3304-53	540.00	74,418.00	5%
LAW ENFORCEMENT				
Public Hunting Grounds	3308-07	5,065.16		
Conservation Officers - Salaries & Expenses	3360-01	142,571.00		
Conservation Equipment	3360-13	6,500.00	154,136.16	11%
			$1,464,007.48	100%

*Continuing Accounts

Expenditures under 3304-47 and 3304-53
75% reimbursable by Federal Funds

RESERVE IN INLAND FISHERIES AND GAME FUND

AS OF JUNE 30, 1966 - $ 497,442.06

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES & GAME

FISCAL YEAR JULY 1, 1965 to JUNE 30, 1966

Account Number	Title	Appropriation	Expenditures & Liabilities	Reverted
3304-01	Administration	$ 193,050.00	$ 185,368.58	$ 7,681.42
3304-42	Fisheries Management	447,000.00	427,159.29	19,840.71
3304-48	Purchase of Land Squannacook River	33,000.00	32,900.00	100.00
3304-51	Wildlife Management	440,500.00	430,301.79	10,198.21
3304-52	Purchase & Development of Land for Wildlife Management Areas	30,000.00	29,900.00	100.00
		$1,143,550.00	$1,105,629.66	$ 37,920.34
		Continuing Appropriation	Expenditures	Balance Forward
3304-41	Damage by Wild Deer & Moose	$ 13,547.95	$ 5,214.50	$ 8,333.45
3304-43	Certain Improvements and Construction - Trout Hatchery East Sandwich	20,000.00		20,000.00
*3304-47	Fish Restoration Projects	86,164.43	50,429.91	35,734.52
*3304-53	Wildlife Restoration	183,665.50	129,408.31	54,257.19
		$ 303,377.88	$ 185,052.72	$118,325.16

*75% reimbursable by Federal Funds

SUMMARY OF FISH & GAME INCOME
July 1, 1965 to June 30, 1966

Fishing, Hunting and Trapping Licenses	$1,360,276.00*
Special Licenses, Trap Registrations and Tags	5,627.51**
Alien Gun Permits	193.50
Rents	3,768.50
Misc. Sales and Income	9,563.20
Pittman-Robertson Federal Aid	96,731.92
Dingell Johnson Federal Aid	67,705.46

Accelerated Public Works Projects	60,268.18
Court Fines	5,532.50
Refunds Prior Year	104.09
Archery Stamps	2,939.10
	$1,612,709.96

*See Detail Sheet #1
**See Detail Sheet #2

DIVISION OF FISHERIES AND GAME

RECEIPTS FROM FISHING, HUNTING, AND TRAPPING LICENSES

Fiscal Year July 1, 1965 to June 30, 1966

LICENSES		PRICE	NUMBER	GROSS	FEES RETAINED BY CLERK	NET RETURNED TO STATE
Series No. 1	Resident Citizen Fishing	$ 4.25	109,371	$ 552,972.75	$27,167.75	$ 525,805.00
Series No. 2	Resident Citizen Hunting	4.25	71,926	316,832.50	17,855.25	298,977.25
Series No. 3	Resident Citizen Sporting	7.25	44,231	361,644.25	10,985.75	350,658.50
Series No. 4	Resident Citizen Minor Fishing	2.25	17,033	52,676.25	4,240.00	48,436.25
Series No. 4A	Resident Citizen Female Fishing	3.25	17,815	71,586.75	4,424.25	67,162.50
Series No. 5	Resident Citizen Minor Trapping	2.25	200	521.00	49.50	471.50
Series No. 6	Resident Citizen Trapping	7.75	575	4,672.75	140.50	4,532.25
Series No. 7	Non-Resident 7-day Fishing	4.25	1,898	8,377.50	470.25	7,907.25
Series No. 9	Non-Resident Fishing	8.75	2,274	21,480.50	558.25	20,922.25
Series No. 9	Alien Fishing	8.75	674	6,433.50	168.50	6,265.00
Series No. 10	Non-Resident Hunting (and alien)	15.25	1,816	27,950.75	394.00	27,556.75
Series No. 12	Duplicate Licenses	.50	3,159	1,581.50		1,581.50
Series No. 15	Resident Citizen Sporting	Free	17,111			
Series No. 17	Resident Citizen Fishing (Old Age Assist.-Paraplegic-Blind)	Free	1,094			
			289,177	$1,426,730.00	$66,454.00	$1,360,276.00

NOTE: Price Increase of $1.00 effective 1/1/66 except Alien Hunting.

ANALYSIS OF SPECIAL LICENSES ISSUED UNDER SECTIONS 48, 68A, 102-3-4 105-6-7 and 112-A-B-C, Chapter 131, G. L. during the FISCAL YEAR ENDED

June 30, 1966

TYPE OF LICENSE		NUMBER ISSUED	RECEIPTS
Trap Registrations:			
	Initial	97	$ 97.00
	Renewal	633	158.25
Fur Buyers:	Resident	24	240.00
Taxidermist:		60	300.00
Propagators:	(Special Fish)		
	Initial	14	28.00
	Renewal	181	181.00
	(Fish)		
	Initial	6	30.00
	Renewal	79	237.00
	(Birds & Mammals)		
	Initial	66	330.00
	Renewal	312	936.00
	(Dealers)		
	Initial	1	5.00
	Renewal	77	231.00
	Additional	383	383.00
	(Ind. Bird or Mammal)		
	Initial	27	27.00
	Renewal	63	31.50
Shiners for Bait:		208	1,040.00
	Duplicates	4	2.00
Field Trial Licenses:		4	40.00
Quail for Training Dogs:			
	Initial	20	100.00
	Renewal	45	135.00
Commercial Shooting Preserves:		10	500.00
Commercial Shooting Tags		2,800	
Commercial Shooting Posters		1,201	
Commercial Shooting Game Tags		5,114	
Commercial Shooting Fish Tags		11,501	570.76
Trapping of Certain Birds:		5	25.00
			$5,627.51

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the latter part of the legislative session of 1965 and during the legislative session of 1966:

CHAPTER 768, ACTS, 1965:	An act providing for the protection of the coastal wetlands of the Commonwealth.
CHAPTER 801, ACTS, 1965:	An act increasing the fees for sporting, hunting, fishing and trapping licenses.
CHAPTER 237, ACTS, 1966:	An act providing that the Director of the Division of Fisheries and Game and the Chairman of the State Reclamation Board be advisory members of the Committee for Conservation of Soil, Water and Related Resources in the Division of Conservation Services in the Department of Natural Resources.
CHAPTER 264, ACTS, 1966:	An act extending the time within which firearms and bows and arrows may be used on Greylock State Reservation.
CHAPTER 320, ACTS, 1966:	An act authorizing the Commonwealth to grant to New Bedford Gas and Edison Light Company easements on, over, under, and across certain land, for the transmission of electric power.
CHAPTER 429, ACTS, 1966:	An act authorizing the Division of Fisheries and Game to acquire certain land in the towns of Ware and Belchertown for fish and wildlife management purposes.
CHAPTER 470, ACTS, 1966:	An act directing the Department of Public Works that advance planning for highway construction shall provide for the protection of water resources, fish and wildlife and recreational values.
CHAPTER 493, ACTS, 1966:	An act authorizing the Division of Fisheries and Game to acquire certain land in the towns of Ware and Belchertown for fish and wildlife management purposes.
CHAPTER 651, ACTS, 1966:	An act to provide for a special inland fisheries and game capital outlay program.
CHAPTER 89, RESOLVES, 1966:	Resolve providing for an investigation and study by the Department of Natural Resources of the inland wetlands in the Commonwealth.

RETIREMENTS

December 31, 1965: Mrs. Frances G. White, Senior Clerk (last day on payroll Nov. 30, 1965) (Died June 25, 1966)
June 4, 1966: George F. Pushee, Jr., Game Biologist

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1966, AND SUMMARY OF OUTSTANDING REGULATIONS.

August 4, 1948. Rules and regulations for the artificial propagation and maintenance of fish.
August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.
July 14, 1952. Rules and regulations for hunting with bows and arrows.
August 12, 1953. Rules and regulations governing sale of protected fresh-water fish by licensed dealers in Massachusetts.
March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts.
January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.
April 10, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire.
February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.
February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.
October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.
May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the Commonwealth.
January 1, 1963. Rules and regulations relating to the hunting of deer in Massachusetts.
January 1, 1963. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.
October 10, 1963. Rules and regulations relating to hunting of pheasants, quail, and ruffed grouse in Massachusetts.
October 10, 1963. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.
December 15, 1963. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.
January 1, 1964. Interstate fishing regulations on Wallum Lake.
April 1, 1964. Interstate fishing regulations on Congamond Lake, Hamilton Reservoir, Colebrook Reservoir, Perry Pond, Muddy Pond, and Breckneck Pond.
April 10, 1964. Rules and regulations relating to the taking of certain fish in Massachusetts.
August 31, 1964. Rules and regulations for trapping of birds by farmers.
September 1, 1965. Migratory Game Bird Regulations 1965-1966.
February 2, 1966. Rules and regulations relative to issuance of permits to expose poisons for the control of mammal and bird species not protected by federal or state statutes.

MASSACHUSETTS :
DIVISION OF FISHERIES AND GAME .

THE SECOND CENTURY OF SERVICE

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ANNUAL REPORT
1967

JAMES M. SHEPARD, DIRECTOR

His Excellency
GOVERNOR JOHN A. VOLPE

COMMONWEALTH OF MASSACHUSETTS
Division of Fisheries and Game
102nd Annual Report

JAMES M. SHEPARD
Director

FISHERIES AND GAME BOARD

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•

STAFF

JAMES M. SHEPARD
Director
RUSSELL A. COOKINGHAM
Assistant Director
[illegible] H. BRIDGES
Superintendent
[illegible] POLLACK
[illegible]

His Excellency, John A. Volpe, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and Second Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1966, to June 30, 1967.

This year, instead of submitting a routine report of accomplishments, we have attempted to utilize the annual report to demonstrate major problems that affect wildlife-orientated outdoor recreation now and in the future, and how this agency is going about meeting those needs.

With the theme "The Second Century of Service," this division of state government commends to your attention the essential need for financial augmention of Massachusetts inland fisheries and wildlife programs presented by this report.

Respectfully submitted,

James M. Shepard
James M. Shepard, Director

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Publication of this document approved by
Alfred C. Holland, State Purchasing Agent
5M-12-67-946348
Estimated Cost Per Copy: $.315

THE BOARD REPORTS

THE Division of Fisheries and Game is the sole agency of the Commonwealth expressly charged with management of all inland fish and wildlife resources of Massachusetts. This responsibility is not limited to "fish and game" but includes, by law, all wild species of birds, mammals and fish found within the confines of the Commonwealth.

While attention in the past has been devoted primarily to fish and game species, the same work that improves hunting and fishing, whether it be research, land and water acquisition, planting of cover or other activities, automatically benefits non-game wildlife. By board policy, land and water areas owned or controlled by the division are available to and heavily utilized by non-conflicting public recreational uses the year around.

The limited Inland Fisheries and Game Fund cannot be expected to support a multiple-use program which benefits all the public. Assistance from others who also benefit, perhaps by General Fund monies, is imperative.

While more detail will be found elsewhere in this booklet, the board wishes to comment on the following highlights of the past year:

Fish Stocking

A total of 369,009 pounds of trout were reared and distributed throughout the state during the reporting period. This amounted to 1,348,711 brook, brown and rainbow trout. In addition, 10,850 landlocked salmon were placed in Quabbin reservoir.

The board wishes to note the retirement on March 31, 1967, of John Norell, culturist in charge of the Sunderland hatchery, after 37 years of devoted service. The increasingly impressive production of our fish hatcheries is largely due to a staff of dedicated and hard-working personnel like Mr. Norell.

The proposed Quabbin Hatchery appears to have suffered postponement because of insufficient funds. Contractor's bids opened in June were all in excess of the 1.2 million dollars allowed by bond issue. A request for the additional funds necessary to commence construction of this badly needed new facility has been submitted. It appears, however, that at least a year will pass before construction can begin.

Fisheries Management

Salmon are beginning to come into the catch at Quabbin Reservoir in worthwhile numbers and the catch of lake trout has increased.

Work was nearly completed on the evolvement of a biologically sound and fair distribution system for trout to streams.

A major fisheries improvement program for the Connecticut river is underway in cooperation with other agencies. Plans are to increase the available shad runs, and hopefully to bring salmon back to the river.

The pesticides laboratory at Westboro continued to be an important adjunct of the fisheries program which contributes vital data of value to all interested in the purity of our waters. Now in its third year, the project is in cooperation with the Massachusetts Health Research Institute and the United States Department of the Interior.

Wildlife Management

Introduction of sharptail grouse to Nantucket, transplants of ruffed grouse from the mainland to Martha's Vinyard and transplants of wild turkeys marked efforts to introduce new species where possible.

New deer regulations were adopted by the board before the close of the fiscal year, requiring a permit to take antlerless deer. The 1966 season covered by this report was not affected by this, however. It was affected by regulations previously adopted by the board, providing for a mandatory check of deer killed. This improved reporting system, now common in many deer states, resulted in a report of 3,404 deer taken.

Field trials, dog training, berry picking, bird watching, sight-seeing, education, target shooting, wilderness camping, horseback riding and ice skating continue to be popular uses of our areas in addition to hunting and fishing.

The wood duck population remains in question. Massachusetts sportsmen again voluntarily approved a reduction of the federally approved daily limit. Studies at Great Meadows revealed that, while nesting success was high, ducklings are retarded in development and there appears to be only about a 20 percent survival to flight stage. This study will be expanded to other areas to determine if this is typical of the statewide population.

Winter inventory of waterfowl indicated a population 136 percent over the average of the past 19 years, with the black duck wintering population up ten percent. The board wishes to commend the U. S. Bureau of Sports Fisheries and Wildlife for its granting of a special coastal black duck season which enables logical harvest of this unique, under-harvested late-wintering black duck population.

The division cooperated in a study of inland wetlands, resulting in a legislative proposal to enact protective measures similar to that now in effect for coastal wetlands.

Game Stocking

Production of pheasants at division game farms continued high, with 53,356 cocks and 15,493 hens reared and released. In addition, 3,532 quail were reared and released and 2,153 white hare were purchased and stocked in suitable covers. Continual production of large numbers of well-feathered, sporty birds in the face of rising costs and without capital expansion is a tribute to dedication and perserverance of our game culturists.

Lands and Waters

The board approved utilization of a bond issue in the amount of $800,000 to be expended as rapidly as possible, as a means of speeding up the acquisition of lands and

HARRY C. DARLING
Chairman
East Bridgewater

BRADLEE E. GAGE
Secretary
Amherst

HENRY J. COLOMBO
Wilmington

EDWARD J. TIERNEY
Pittsfield

MARTIN H. BURNS
Newbury

waters rather than waiting for funds to accumulate from license revenue. Bonds will be repayed from the dollar-per-license increase earmarked for acquisition. It appears that the interest rate on these bonds will actually be less than the average rate of increase of real estate value. In effect the program thus has been expedited by three years without additional cost. Further, it has been carried out to date without adding to the staff.

At this writing approximately 15 acquisitions are either completed or in final stages of completion and another 20 are being actively worked on or investigated. Emphasis has been on huntable areas, access to streams and smaller ponds, and to some degree on coastal marshes.

Information and Education

This program has dual purposes: to develop public concern for the wise management of our natural resources with emphasis on fish and wildlife, and to furnish information and guidance that will enhance public enjoyment of outdoor sports and improve cooperation with sound conservation programs. This effort for the third time received international recognition with receipt of a first-place award for excellence of its effective planning and utilization of diverse and complex media.

Public Hearings

The holding of public hearings to establish or reject regulatory proposals is a basic board function. A list of regulatory adoptions is included elsewhere in this booklet as required by law. Public hearings were held by the board on July 15, 1966 (rails, gallinules, woodcock and snipe seasons), August 26, 1966 (general waterfowl seasons), September 9, 1966 (deer regulations), and May 26, 1967 (deer regulations). All regular monthly meetings were held, as well as two joint meetings with the Board of Natural Resources.

Board Personnel

Bradlee E. Gage of Amherst was appointed by Governor Volpe on January 3, 1967, replacing Stanley Mikelk of Gilbertville whose term had expired. Mr. Mikelk's leaving was noted with public award of a special plaque and fishing tackle on behalf of the board and division staff. On June 20, 1967, Harry C. Darling was unanimously elected Chairman and Bradlee E. Gage was unanimously elected Secretary.

Respectfully submitted,

Harry C. Darling, Chairman
Bradlee E. Gage, Secretary
Henry J. Colombo
Edward J. Tierney
Martin H. Burns

FISHERIES MANAGEMENT

PROJECTS continued during the past year included Quabbin Reservoir investigations, harvest studies on managed ponds, water quality studies, pond reclamation, stream access and development and warmwater fisheries research.

Newly created projects include a study of shad in the Connecticut river and development of a stream trout stocking formula.

Creel census reports indicate that 64,802 fishermen took 59,612 fish weighing 59,305 pounds at Quabbin Reservoir between April and October. An increase in the lake trout harvest was noted, also increased interest in landlocked salmon, with these fish beginning to come into the catch in worthwhile numbers. 10,800 landlocks were stocked this year. Creel census was also conducted on three reclaimed ponds.

The statewide project to determine extent of variations of chemical constituents and possible limiting factors to freshwater fish survival was intensified.

Pond reclamations totalling more than 480 acres were conducted for trout and smallmouth bass according to the best use of each pond. Ponds so treated were Pleasant Pond, Wenham; Houghton's Pond, Milton; Lake Saltonstall, Haverhill; Great Pond, Truro; Sheep Pond, Brewster; Ashumet Pond, Falmouth; and Fearing Pond, Plymouth.

Dwindling access to many trout streams necessitated continuation of the program to provide anglers with a place to fish. Roads, parking lots and the opening of streamside foot trails and clearings are all included. One important result is that hatchery trucks can now release trout in locations that were formerly inaccessible.

An investigation of past stocking methods and the formulation of a biologically sound and equitable stream trout stocking basis was conducted. Classification and investigation of waters throughout the state was completed and incorporated into a distribution formula to be utilized in all future stocking.

The final segment of a three-year harvest and population study on the Connecticut River was completed. Angler counts and fishermen interviews were made and coupled with weekly aerial counts of anglers on the entire length of the river within Massachusetts. Samples of fish populations were taken by electrofishing and netting.

Maintenance of two warmwater fish culture pond systems and distribution of their product was continued. Maintenance of public fishing areas and habitat improvements were intensified. District personnel investigated fish kills, advised sportsmen's groups in fish-pond management, and cooperated with federal agencies on surveys of interstate waters.

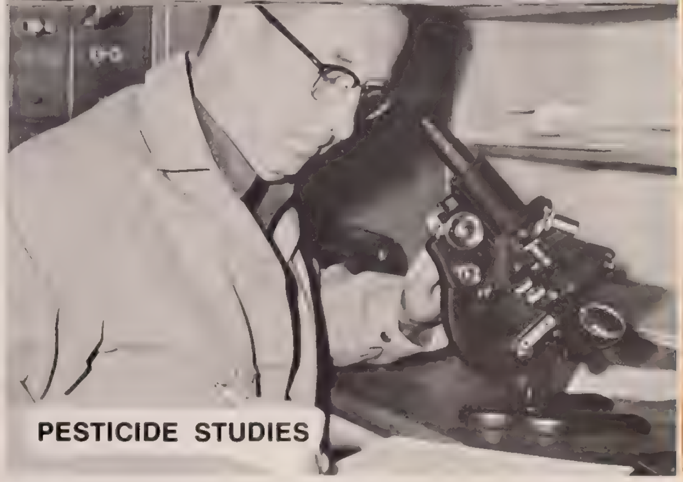
The Harold Parker pond system yielded 1679.4 pounds of largemouth bass and 338.8 pounds of smallmouths. The Merrill pond system produced 1028 pounds of largemouth bass adn 886 pounds of chain pickerel.

The pesticides laboratory at Westboro, now in its third year of a cooperative project with the Massachusetts

WATER QUALITY

FISH STOCKING

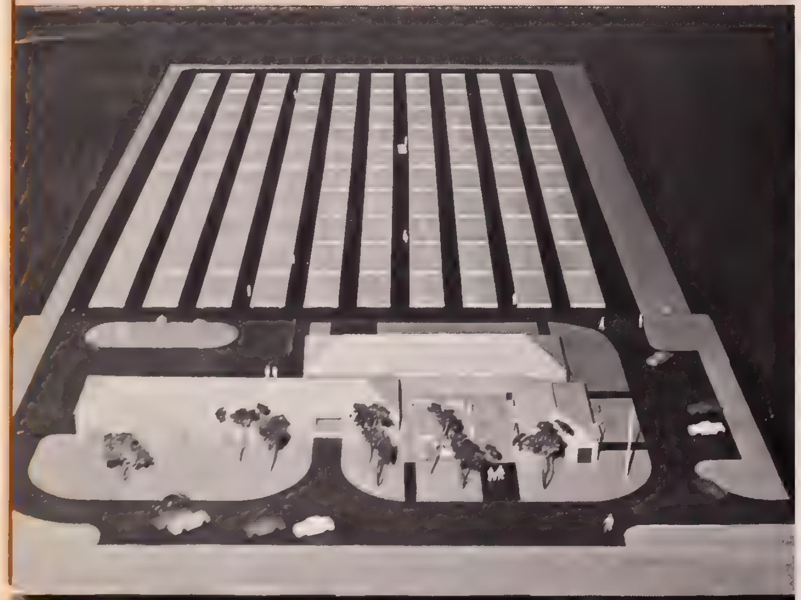
POND RECLAMATION



PESTICIDE STUDIES

OPENING DAY SUCCESS

MODEL OF QUABBIN HATCHERY



Health Research Institute and the United States Department of the Interior, concluded the second segment with a report involving analysis of 603 fish samples collected from 91 locations throughout the state.

In addition, analysis of fish from various other sources was accomplished. Sixty trout from hatcheries were analyzed for DDT, DDE and TDE (DDD), as were approximately 120 lake trout from Quabbin Reservoir and twenty miscellaneous fish and duck samples.

In conjunction with the division, the University of Massachusetts continued research on the Connecticut River and various ponds. The Connecticut River study includes investigation of ecology of American Shad and food habit study.

Warmwater research placed emphasis on age and growth analysis and population estimates. An ecological survey was initiated in one pond and a program was initiated to study ecological characteristics of artificial ponds.

Late in the fiscal year a cooperative effort between the division and other agencies was initiated on the Connecticut to increase the shad population and hopefully to return salmon runs to the river. State fisheries units of Connecticut, New Hampshire and Vermont, the U. S. Fish and Wildlife Service, the University of Massachusetts, and the Northeast Utilities Service Company are involved.

Over one million shad eggs were transferred from a location in Connecticut to areas just below Vernon dam and success of their hatching was observed. The river was mapped from Turner's Falls to Vernon. A tagging study was initiated at Holyoke and observations conducted on shad movement.

HATCHERY PRODUCTION—1967

Trout Distribution from State and Federal Hatcheries

JULY 1, 1966 TO JUNE 30, 1967

STATION POUNDAGE

Station	*Pounds*	*Totals*
Berkshire Hatchery	24,897	
Montague Hatchery	62,558	
Palmer Hatchery	51,705	
Sandwich Hatchery	67,389	
Sunderland Hatchery	103,106	
Sutton Hatchery	17,515	
STATE POUNDAGE		327,170
Berlin, New Hampshire	359	
Nashua, New Hampshire	12,928	
North Attleboro, Mass.	21,683	
Pittsford, Vermont	6,869	
FEDERAL POUNDAGE		41,839
Grand Total Poundage		369,009
Total Numbers		1,348,711

(This table does not show trout retained for breeders)

LAND AND WATER ACQUISITION

THE Realty Section was engaged at the year's opening in acquiring several small parcels, principally in the Northeast Management Area, to round out boundaries. Four more parcels were acquired along the Squannacook River, two being key pieces adjacent to present division-owned land. An interior parcel was purchased in the Phillipston Area. Approximately one hundred acres along the east brach of the Westfield River and another half-mile of the Little River were purchased.

An $800,000 bond issue has been nearly expended in a greatly expanded land and water acquisition program. Beginning with a workshop for division employees involved in the program, the section has launched and carried out an acquisition program without increasing personnel by even one. As of this report, the nucleus of a new farm game area of over 300 acres in central Worcester County has been added. Another area in central Berkshire County of over 500 acres was in the final stages of acquisition.

Most of the river-front land along the Millers between Athol and South Royalston and some 700 acres of other land in the area is in final stages. Purchase of nearly 700 additional acres in Belchertown adjacent to the Swift River area was completed. Parcels are being added to the Quaboag area, the Chester area, and preliminary work on two additional areas was in progress. Land with water rights in Bristol County, nearly complete, offers opportunity for a new warmwater fish culture system. A temporary use permit for the Knightsville area was obtained.

Preliminary work on several coastal marsh areas and access sites to streams and smaller ponds is underway.

While the State Access Board is doing yeoman work on larger ponds, the division feels that smaller waters also require attention. Accordingly, acquisition of access to streams and small ponds is being stepped up. Acquisition of coastal marshes to protect and preserve these vital sources of both recreation and marine life is vital to their future. A specific portion of available funds has been designated for these purposes.

While the acquisition process is complex for any property, it is more so in the case of coastal marshes. Determining property lines, finding lost chains of title and ambiguous deeds all tend to slow up the process.

Land costs are following an upward spiral and large, contiguous tracts are becoming increasingly harder to find. Lake and pond access sites are fast being priced out of the division's capability. With multiple recreational and educational uses, as well as the mere fact of preservation of our outdoors, it is apparent that additional sources of funds for the purpose must be found. The hunter and fisherman should not, and cannot, entirely support this program.

A few properties have been acquired by gift. This is a commendable way to perpetuate the property and express the giver's interest in conservation and the public good. There is no better way for a landowner to insure the perpetual preservation of outdoor values he has cherished than to give or bequeath such properties to this agency.

WILL AREAS LIKE THIS LAST?

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DONATED BY SPORTSMEN'S CLUBS

In conserving our outdoor areas opportunities delayed mean opportunities lost

— President John F. Kennedy

THE SECONI

First organized as a cor
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well into its second century

The rest of this booklet
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MASSACHUSETTS MOOSE

WATERFOWL BANDING

DEER CHECKING

WILDLIFE MANAGEMENT

RESEARCH and management directed towards deer, waterfowl and turkeys and development of wildlife management areas marked the game program during the past year.

Construction or maintenance of buildings, roadways, dams, bridges and other facilities, erection of signs, and planting of shrubs and food crops on wildlife management areas throughout the state were accomplished.

A hunter questionnaire, done every second year, revealed that 81 percent of Massachusetts small-game hunters are successful. The harvest of all species except waterfowl and ruffed grouse increased. Hunting effort was greatest on pheasants, followed by grouse, cottontails, squirrels, woodcock, white hare, black duck, other ducks, quail and raccoon, in that order.

Private land continues to be important. More than half our hunters hunt only on private land (57%). Ten percent hunt only on wildlife management areas, and 34 percent hunt both. However, pheasant hunters utilized state areas to a slightly greater degree than did other hunters.

Deer hunters reported 3,404 deer during the 1966 season, of which 18 were taken by archers. Compulsory physical check of deer this year resulted in a higher reported figure than the former system.

Motor vehicles account for the highest mortality of deer second to hunting, with 71 percent of the nonhunting total. Dogs take about 10 percent, illegal kills about six percent, and the remainder of the annual nonhunting mortality (13 percent) is by various lesser causes.

Potential deer range statewide was delineated on ecological cover maps preparatory to comparison with present deer range.

The wild turkey is believed to be firmly established in Quabbin, enabling transplants to the Barre area. Brood reports have been good in both areas. However, the status of other plants is questionable; some remain fairly static while others have dispersed. The Mount Washington flock, however, has increased.

Mourning dove counts showed an increase of 400 percent on the Crane area, believed due to planting of grain. Other counts show an increase with the exception of that at Myles Standish State Forest.

A study of 13 wildlife management areas (about half the total available) indicated that they supplied 49,340 hunter trips in the 1966 season. Peak usage as usual occurred on Saturdays and opening day. Other uses of these areas include field trials, dog training, fishing, wilderness camping, berry picking, bird watching, sightseeing, education, target shooting, horseback riding and ice skating.

Survival of wood duck ducklings at Great Meadows is poor. Only 20 percent of tagged ducklings could be traced to the flight stage. Those examined appear to be retarded in growth. Banding and study of wood ducks will be expanded to other areas to determine if the same situation exists across the state. At Great Meadows, there appears to be a poor recruitment of young birds to the resident breeding population.

Winter inventory of waterfowl on the coast reported a total wintering population 136 percent greater than the average of the past 19 years. Black ducks alone were up ten percent.

Sea duck (scoter, eider, old squaw) concentrations were marked at Monomy Island, Cohasset, Brewster, Nantucket, Martha's Vineyard, Brant Rock and Barnstable. Buildups occurred beginning in October with over 24,000 birds seen. By November the figure exceeded 37,000, and in January over 97,000.

A total of 1578 black ducks were banded in a cooperative project between this division and federal personnel.

Nesting studies on Canada goose were begun on the Sudbury Reservoir flock. Transfer of goslings from this flock to establish huntable populations is foreseeable.

A division biologist assisted in a "wing session" at the Patuxent Research Station in Maryland for the fourth year. Over 20,000 duck wings sent in by hunters were identified, sexed and aged to provide part of the data used in setting waterfowl regulations.

The Department of Natural Resources was assisted in a statewide inventory of inland wetlands, resulting in proposed legislation which would afford protection similar to that now in effect on coastal marshes.

Importation of new species was marked by the introduction of 91 sharptail grouse (received from South Dakota) on Nantucket Island, and the transfer of 97 ruffed grouse from the mainland to Martha's Vineyard.

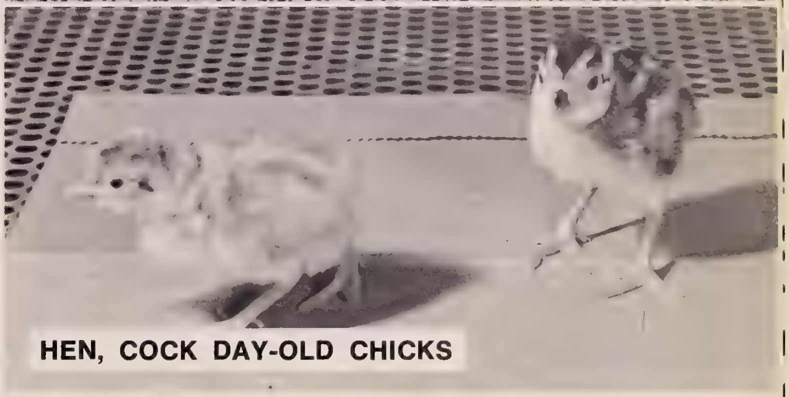
The beaver pelt harvest continues to increase. Trappers reported taking 1040 beaver from 96 towns with about 63 percent coming from west of the Connecticut River.

Research conducted over the past two years at the Ayer Game farm in cooperation with the Massachusetts Wildlife Cooperative Unit has developed an efficient technique of accurately sexing day-old pheasant chicks. This was accomplished through development of coloration charactersitics which differentiate the sexes at this age.

Preliminary research was also conducted with the unit to develop a strain of pheasants which would be acclimated to stocking in submarginal and pole-stage hardwood areas.

Other activities of the game program, largely accomplished by the districts, included distribution of pheasants, quail and hare (see table), tagging beaver pelts, providing technical advice to landowners, investigating Hatch Act applications, participating in preparation of natural resource plans for towns, combatting forest fires, supplying traps for nuisance complaints, patrolling public areas during the upland season, cooperating with federal authorities in woodcock census, servicing field trials, and miscellaneous work.

PHEASANT STOCKING



HEN, COCK DAY-OLD CHICKS

GAME DISTRIBUTION

JULY 1, 1966 — JUNE 30, 1967

Pheasant			
Adults: Spring and summer liberations	6,972	1,101	8,073
Young: August liberations (12 weeks)	8,083	7,127	15,210
October-November liberations (17-25 weeks)	438	40,168	40,606
Sportsmen's Club Rearing Program	0	4,960	4,960
TOTALS	15,493	53,356	68,849
Quail			
Adults:			172
Young:			3,360
TOTALS			3,532
White Hare			
Northern Varying, purchased			2,153

TOP CAMPERS, DIRECTORS OF JUNIOR CONSERVATION CAMP

INFORMATION AND EDUCATION

The real substance of conservation
lies not in the physical projects of government
but in the mental processes of citizens
— Aldo Leopold

ALL other things being equal, the deciding factor in whether conservation programs succeed or not is usually public understanding.

The information and education program has dual primary purposes; first, to develop public understanding of and concern for conservation, with emphasis on fish and wildlife, and secondly to provide informational services to the public which assist in enjoyment of the outdoors. Further, the program is responsible for developing public cooperation with all policies and programs of the division.

However, money is basic to all endeavors. Much effort was expended during the year toward expansion of revenue sources primarily to support land and water acquisition.

Increased activity was conducted just before and during both the fishing and hunting seasons to build interest in these sports.

Constantly growing effort was put forth to acquaint the public with the pros and cons of firearms legislation and the role played by firearms and hunting in conservation.

A significant achievement in this regard was securing of a New England-wide resolution of fish and game directors stating their combined position on firearms laws, which was published in the *Congressional Record* and widely quoted. Numerous news releases, public appearances and magazine articles were devoted to guns and hunting.

Efforts to secure publicity outside the state, as an aid to tourist fishing and hunting revenue, were conducted. At the year's end personnel were cooperating with the Department of Commerce and Development in the publication of a comprehensive guide to outdoor recreation in Massachusetts. They were also cooperating with two national television networks in hopes of securing national coverage of Bay State sports. Increasing national magazine and out-of-state newspaper coverage was assisted.

A total of 124 news stories were issued; 94 via printed news releases by the I&E Section and 12 by the district managers. Eighteen stories were released by television news film. Clippings received totalled 3,048 pieces.

Two feature articles were placed by I&E and 13 news columns resulted from personal field contact by managers. Captioned groups of photos were issued before hunting and fishing seasons to two publications (1 national, 1 state) and wire services were supplied photos on eight occasions. Members of the press were taken on 18 field trips. The press was almost constantly assisted in response to telephone queries.

Six issues of MASSACHUSETTS WILDLIFE magazine were published, with circulation at the close of the fiscal year at 33,423 and growing with each issue.

"Dateline Boston" television show was participated in 19 times and guest spots were filled on a number of other tv and radio shows. More than 42,000 people viewed division films (532 bookings) other than on television.

Eleven exhibits were conducted or assisted at major sports shows and fairs.

An employee workshop was conducted during the

MORE THAN MEETS THE EYE

IN addition to easily visible programs, the division carries an increasing workload of cooperative activities with many other agencies. Requirements for our assistance have increased greatly in the past decade, including the following:

U. S. Army Corps of Engineers

In determining the need for flood control, dredging and beach erosion projects, the division evaluates possible effects on fish and wildlife and presents recommendations to prevent losses, or modifications which may actually benefit fish and wildlife.

U. S. Soil Conservation Service

Through a small watershed protection program, multiple purpose flood control, fish and wildlife and recreational projects can be undertaken on a cost-sharing basis through a local sponsor. Effects on fish and wildlife are evaluated.

Division of Water Pollution Control

The division provided data necessary to protect and enhance fish populations in development of the state's water quality standards and classification of all waters. The planned water pollution abatement program will require considerable fish population evaluation.

Department of Public Works

Coordination of highway plans with fish and wildlife interests was promoted by directive from the U. S. Bureau of Public Roads and became necessary on all federally assisted projects. More recently, Chapter 470 of the Acts of 1966 further required coordination of state projects. Closer liaison and a refined agreement with the Department of Public Works are needed if the intent of protecting fish and wildlife resources is to materialize.

Pesticide Board

In addition to being an ex-officio member, the division has monitored pesticide concentrations in fish. Several special studies have been undertaken in conjunction with experimental pesticide application programs authorized by the board.

Access Board

Division representatives have been involved in the public access program since inception. The first five projects were constructed with Accelerated Public Works monies made available to this program by this division.

Planning

Regional and local planners have upon request been provided with numerous special reports concerning fish and wildlife resources. Division personnel now serve on study teams which assist towns in planning.

Conservation Education

In addition to having full responsibility for the Massachusetts Junior Conservation Camp in cooperation with Massachusetts Conservation Incorporated, the division also assists the Department of Education and serves on the state's Conservation Education Advisory Committee.

Tourism

The division actively assists the Division of Vacation Travel of the Department of Commerce and Development with respect to outdoor-orientated tourist travel promotion.

Need

Growing demands for such cooperative programs, and increasing requests from individuals, organizations and industries have been serviced in the past without additional personnel. It is evident that such activities will increase in the future and already pose the necessity for additional personnel.

If the division is to live up to its responsibility of protecting, maintaining and enhancing all of the fish and wildlife resources of Massachusetts it too will need assistance, in the form of sufficient personnel to function properly. Justice cannot be done to all programs unless such help is forthcoming.

> **Massachusetts has as much**
> **to offer as any state**
> **and more than most -**
> **if we save it in time.**
> **-Lt. Governor Francis Sargent**

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winter and a joint staff meeting was held with the Massachusetts Audubon Society, as aids to overall work of the agency.

"Wildlife Week" was observed by issuance of a Governor's Proclamation, and participation in the Massachusetts Committee for Wildlife Week through numerous releases.

At the close of the year planning was underway for expansion and improvement of the magazine's format provided a subscription fee can be charged.

Annual publications such as licenses, laws, closed town list, archery stamps, license sales manual, stocking list and annual report were published.

The annual Junior Conservation Camp in cooperation with the Department of Natural Resources and Massachusetts Conservation Incorporated was conducted with 142 boys completing the course. Continual assistance was given to the Department of Education.

Financial Report, July 1, 1966 To June 30, 1967

HOW THE SPORTSMAN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	3304-01	$107,409.08		
Board of Fisheries & Game	3304-01	948.64	$108,357.72	6%
Information - Education	3304-01	—	78,068.98	4%
FISHERIES MANAGEMENT				
Fish Hatcheries	3304-42	—	350,951.43	19%
Management	3304-42	129,879.49		
Fish Restoration Projects	3304-47	55,322.96		
Management	3304-51	94,490.31		
Fisheries Research Coop. Unit	3304-55	10,000.00	289,692.76	16%
WILDLIFE MANAGEMENT				
Game Farms	3304-51	—	263,423.73	14%
Management	3304-51	94,490.32		
*Damage by Wild Deer & Moose	3304-41	12,445.63		
Wildlife Research Coop. Unit	3304-44	9,380.69		
Wildlife Research Restoration	3304-53	182,285.23	298,601.87	16%
LAND ACQUISITION				
Fish Restoration Projects	3304-47	3,800.00		
Purchase of Land - Squannacook	3304-48	29,928.65		
Purchase & Development of Land for Wildlife Management Areas	3304-52	29,753.00		
Wildlife Restoration	3304-53	8,694.00		
Acquisition of Land & Waters for Fish & Wildlife Management Purposes	3304-60	166,000.00	238,175.65	13%
LAW ENFORCEMENT				
Public Hunting Grounds	3308-07	9,917.00		
Natural Resource Officers — Salaries & Expenses	1003-00	145,993.00		
OTHER — Office of the Commissioner	1001-02	2,500	158,410.00	8%
CONSTRUCTION				
Plans & Specs. for Const.	3304-54	60,000.00		
Quabbin Fish Hatchery (a)				
*Certain Construction and Improvements to Trout Hatchery East Sandwich	3304-43	22,532.75	82,532.75	4%
GRAND TOTAL:			$1,868,214.89	100%

*Continuing Accounts
(a) Expended by BBC
3304-47 — 3304-53 75% reimbursable - Federal Funds

RESERVE IN INLAND FISHERIES & GAME FUND June 30, 1967 — $591,670.88

APPROPRIATIONS & EXPENDITURES

Account No. & Title		Appropriation	Expenditures & Liabilities	Reverted
3304-01	Administration	$ 187,189.00	$ 186,426.70	$ 762.30
3304-42	Fisheries Management	489,220.00	480,830.92	8,389.08
*3304-47	Fish Restoration Projects	76,975.52	59,122.96	17,852.56
3304-48	Purchase of Land - Squannacook River	30,000.00	29,928.65	71.35
3304-51	Wildlife Management	458,231.00	452,404.36	5,826.64
3304-52	Purchase & Development Land for Wildlife Management Areas	30,000.00	29,753.00	247.00
*3304-53	Wildlife Restoration	199,525.19	190,979.23	8,545.96
3304-60	Acquisition of Land & Waters for Fish & Wildlife Management Purposes	166,000.00	166,000.00	0.00
3304-62	Connecticut River Shad Study	2,500.00	0.00	2,500.00
		$1,639,640.71	$1,595,445.82	$44,194.89
		Continuing Appropriations	*Expenditures*	*Balance Forward*
3304-41	Damage by Wild Deer & Moose	$ 15,611.45	$ 12,445.63	$ 3,165.82
3304-43	Certain Construction & Improvements to Trout Hatchery — East Sandwich	50,000.00	22,532.75	27,467.25
3304-56	Renovation of a Certain District Regional Headquarters Building	15,000.00	—	15,000.00
		$ 80,611.45	$ 34,978.38	$45,633.07

*75% reimbursable by Federal Funds

SUMMARY OF INCOME

Fishing, Hunting and Trapping Licenses	$1,412,139.75
Special Licenses, Trap Registrations, Tags and Alien Gun Permits	6,006.66
Rents	3,636.25
Misc. Sales and Misc. Income	6,201.14
Pittman-Robertson Federal Aid	127,482.10
Dingell Johnson Federal Aid	73,229.22
Court Fines	7,030.50
Refunds Prior Year	191.44
Archery Stamps	3,299.80
TOTAL:	$1,639,216.86

ANALYSIS OF SPECIAL LICENSES

TYPE OF LICENSE	*NUMBER ISSUED*	*RECEIPTS*
TRAP REGISTRATIONS:		
Initial	105	$ 105.00
Renewal	615	153.75
FUR BUYERS:		
Resident	23	230.00
TAXIDERMIST:	70	350.00
PROPAGATORS:		
(Special Fish)		
Initial	19	38.00
Renewal	204	204.00
(Fish)		
Initial	6	30.00
Renewal	78	234.00
(Birds & Mammals)		
Initial	67	335.00
Renewal	343	1,029.00
(Dealers)		
Initial	30	150.00
Renewal	71	213.00
Additional	535	535.00
(Ind. Bird or Mammal)		
Initial	25	25.00
Renewal	66	33.00
SHINERS FOR BAIT:	191	955.00
FIELD TRIAL LICENSES:	4	40.00
QUAIL FOR TRAINING DOGS:		
Initial	13	65.00
Renewal	50	150.00
ALIEN GUN PERMIT:	88	198.00
COMMERCIAL SHOOTING PRESERVES:	8	400.00
Tags	2050	
Posters	100	
Game Tags	5308	
Fish Tags	13,601	508.91
TRAPPING CERTAIN BIRDS:	5	25.00
TOTAL		$6,006.66

RECEIPTS FROM FISHING, HUNTING & TRAPPING LICENSES

Licenses			*Price*	*Number*	*Gross Amount*	*Fees Retained By Clerk*	*Net Returned to State*
Series	1	Res. Cit. Fishing	($ 5.25)	102215	$536,710.00	$25,375.50	$511,334.50
"	2	" " Hunting	(5.25)	68649	360,266.25	17,054.75	343,211.50
"	3	" " Sporting	(8.25)	46675	385,066.75	11,579.00	373,487.75
"	4	" " Minor Fishing	(3.25)	15277	49,647.75	3,800.25	45,847.50
"	4A	" " Female Fishing	(4.25)	16544	70,317.50	4,108.75	66,208.75
"	5	" " Minor Trap.	(3.25)	250	812.50	62.25	750.25
"	6	" " Trapping	(8.75)	568	4,966.50	141.25	4,825.25
"	7	Non-Res. 7-Day Fishing	(5.25)	1787	9,380.75	445.25	8,935.50
"	9	" " Fishing	(9.75)	2214	21,594.25	542.50	21,051.75
"	9	Alien Fishing	(9.75)	556	5,415.50	137.75	5,277.75
"	10	Non-Res. Hunting	(16.25)	2065	30,032.75	381.00	29,651.75
"	12	Duplicate Licenses	(.50)	3115	1,557.50		1,557.50
"	15	Res. Cit. Sporting	(Free)	15642			
"	17	" " (Old Age Asst) Paraplegic and to the Blind	(Free)	864			
				276421	$1,475,768.00	$63,628.25	$1,412,139.75

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS THROUGH JUNE 30, 1967

Species	*Weight*	*Length*	*Girth*	*Place Caught*	*How Caught*	*Date*	*Caught by*
Largemouth Bass	12lbs. 1oz.	25¾″	21¾″	Palmer River, Palmer	bait casting	5-9-63	George Pastick, Fall River
Smallmouth Bass	6lbs. 12oz.	21″		Pleasant Lk., Harwich	spinning	5-14-67	Thomas Paradise, Arlington
Northern Pike	24lbs. 8oz.	45½″	22″	Onota Lake, Pittsfield	live bait	1-13-67	Kris Ginwaith, Pittsfield
Pickerel	9lbs. 5oz.	29½″		Pontoosuc Lk. Lanesboro		1954	Mrs. James E. Martin, Stockbridge
Rainbow Trout	8lbs. 4oz.	26″	16″	Deep Pond, Falmouth	live bait	10-15-66	Roger Walker, Eastondale
Brown Trout	19lbs. 10oz.	31½″	22⅝″	Wachusett Res. Boylston	spinning	5-19-66	Dana DeBlois, Sterling
Lake Trout	13lbs. 1oz.	31″		Quabbin Res., Pelham	trolling	7-13-63	LeeRoy DeHoff, Suffield, Conn.
Shad	6lbs. 13oz.						
Walleye	8lbs. 8oz.	28½″	15½″	Quabbin, Hardwick		7-15-65	Joseph Schwartz, Holden
Catfish	12lbs.	28″	18″	Watershop Pd. Sprgfld.	live bait	5-28-67	Altha Smith, Springfield
Bluegill	1lb.	11¼″	9½″	Bog Pond, Norton	spinning	10-17-65	Robert Barrett, Stoughton
Bullhead	5lbs. 9oz.	22½″	11½″	Conn. River, Hadley	live bait	6-8-63	Mrs. Erna Storie, Chicopee Falls
	5lbs. 8oz.	22½″	14″	Leverett Pd., Leverett	live bait	8-2-65	Stephen Brozo, No. Amherst
	4lbs. 9oz.	22½″	11½″	Conn. River, Chicopee	live bait	9-8-65	Joseph Kida, Chicopee
Calico	2lbs. 9½oz.	18″	14″	Merrimack, Lowell	spinning	6-8-65	George Olsson, Lowell
White Perch	2lbs. 4oz.	16¾″	11¾″	Halfway Pd., Plymouth	spinning	9-9-65	Richard Rock, Kingston
	2lbs.	16¾″	11¼″	Halfway Pd., Plymouth	spinning	6-18-66	Richard Rock, Kingston
Yellow Perch	2lbs.	16¾″	10¾″	Grt. Herring, Plymouth	live bait	5-9-66	Anthony Scolaro, Braintree
Brook Trout	4lbs. 12oz.	20¾″		Mashpee, Falmouth	live bait	4-30-67	Angelo Samerelli, Quincy

RULES AND REGULATIONS

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1967, AND SUMMARY OF OUTSTANDING REGULATIONS.

August 4, 1948. Rules and regulations for the artificial propagation and maintenance of fish.

August 4, 1948. Rules and regulations for the artificial propagation of birds and mammals.

July 14, 1952. Rules and regulations for hunting with bows and arrows.

August 12, 1953. Rules and regulations governing sale of protected fresh-water fish by licensed dealers in Massachusetts.

March 26, 1954. Rules and regulations governing the display of sporting, hunting, fishing, and trapping licenses in Massachusetts.

January 28, 1955. Rules and regulations relative to public fishing grounds in Massachusetts.

April 10, 1956. Rules and regulations governing the taking of fish in interstate ponds lying between Massachusetts and New Hampshire.

February 14, 1957. Rules and regulations relating to the taking of carp and suckers for the purpose of sale.

February 15, 1957. Rules and regulations relative to the tagging of deer in Massachusetts.

October 20, 1959. Rules and regulations for public shooting grounds and wildlife management areas in Massachusetts.

May 10, 1962. Rules and regulations relating to the taking of shad in the inland waters of the Commonwealth.

January 1, 1963. Rules and regulations relating to the hunting of hares and rabbits in Massachusetts.

October 10, 1963. Rules and regulations relating to hunting of pheasants, quail, and ruffed grouse in Massachusetts.

October 10, 1963. Rules and regulations relating to the hunting of gray squirrels in Massachusetts.

December 15, 1963. Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.

January 1, 1964. Interstate fishing regulations on Wallum Lake.

April 1, 1964. Interstate fishing regulations on Congamond Lake, Hamilton Reservoir, Colebrook Reservoir, Perry Pond, Muddy Pond, and Breckneck Pond.

April 10, 1964. Rules and regulations relating to the taking of certain fish in Massachusetts.

August 31, 1964. Rules and regulations for trapping of birds by farmers.

February 2, 1966. Rules and regulations relative to issuance of permits to expose poisons for the control of mammal and bird species not protected by federal or state statutes.

September 10, 1966. Migratory Game Bird Regulations 1966-1967.

January 1, 1967. Amendment to fishing regulations (re trout bag limit on section of Swift River).

January 1, 1967. Rules and regulations regarding Ashfield Lake in town of Ashfield.

July 1, 1967. Rules and regulations relating to the hunting of deer in Massachusetts.

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1967:

CHAPTER 205, ACTS, 1967. — An act designating the fish hatchery on the Swift River in the town of Belchertown as the Charles L. McLaughlin Fish Hatchery.

CHAPTER 243, ACTS, 1967. — An act authorizing the Division of Fisheries and Game to apply for and receive certain federal grants and to construct and equip a fish hatchery complex.

CHAPTER 262, ACTS, 1967. — An act authorizing the Director of the Division of Fisheries and Game to acquire certain lands for fish and wildlife purposes without the consent of certain elected officers of a city or town wherein such lands lie.

CHAPTER 511, ACTS, 1967. — An act authorizing the Commonwealth to grant easements over, across and upon certain land in the town of Sutton, for the transmission of electric power, to New England Power Company.

CHAPTER 544, ACTS, 1967. — An act authorizing the Director of Fisheries and Game to designate certain persons to issue sporting, hunting, fishing, or trapping licenses.

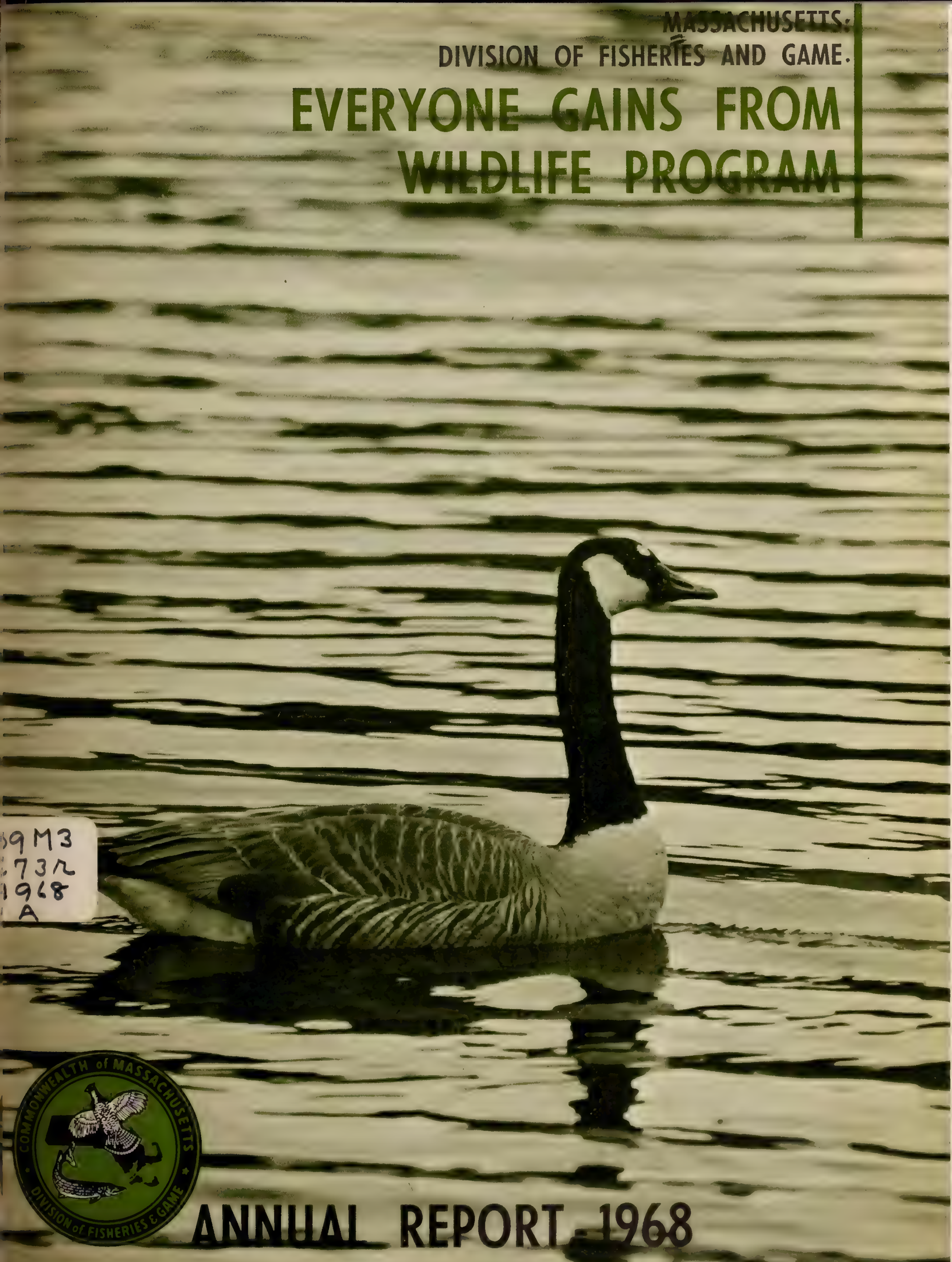
CHAPTER 71, RESOLVES, 1967. — Resolve providing for an investigation and study by the Department of Natural Resources relative to the construction of certain recreation areas and other related matters.

CHAPTER 78, ACTS, 1967. — Resolve providing for an investigation and study by the Department of Public Works relative to the law of eminent domain, construction of certain recreational facilities, and certain highway and waterway improvements.

RECREATION RESOURCES ARE
AS MUCH A PART OF
OUR NATIONAL RESOURCES
AS ARE OUR MINERALS,
OUR FUELS AND OUR FORESTS
— President Dwight D. Eisenhower

MASSACHUSETTS.
DIVISION OF FISHERIES AND GAME.

EVERYONE GAINS FROM WILDLIFE PROGRAM



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ANNUAL REPORT 1968

COMMONWEALTH OF MASSACHUSETTS
Division of Fisheries and Game
103rd Annual Report

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1969
STATE HOUSE, BOSTON

His Excellency
GOVERNOR JOHN A. VOLPE

JAMES M. SHEPARD
Director

His Excellency, John A. Volpe, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and Third Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1967, to June 30, 1968.

Concurrent with the theme of this year's annual report, that of "Public Service," I commend to your attention the very real diversity of public service to all citizens of the Commonwealth demonstrated by this report and respectfully urge your consideration of the vital necessity for financial augmention to meet increased demands for services and resulting benefits provided by these programs.

Respectfully submitted,

James M. Shepard

James M. Shepard, Director

FISHERIES AND GAME BOARD

HARRY C. DARLING, Chairman
East Bridgewater
BRADLEE E. GAGE, Secretary
Amherst
HENRY J. COLOMBO
Wilmington
MARTIN H. BURNS
Newbury
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•

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RALPH R. BITZER
Chief Fish Culturist
[illegible] CHAPLIN, Chief
[illegible] Education
[illegible] JOHNSON
[illegible] Chief

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Publication of this document approved by
Alfred C. Holland, State Purchasing Agent
5M-1-69-948697
Estimated Cost Per Copy: $.375

THE BOARD REPORTS

"PUBLIC service," the theme of this year's annual report of the Division of Fisheries and Game, is an all-inclusive term that at first glance might appear not universally applicable to an agency whose first responsibility is fish and game and whose most obvious public is those who buy fishing and hunting licenses.

There may have been a time when those interested in fish and game matters looked upon the state wildlife agency as being concerned only with the amount and quality of hunting, fishing or trapping available. It is still true that the quality and quantity of outdoor recreation dependent upon wildlife resources is the chief responsibility of this agency.

However, today's modern wildlife agency cannot begin to fulfill even this chief responsibility without becoming concerned and deeply involved with every aspect of natural resource management. And it is also very apparent that the benefits derived from fostering wildlife-orientated outdoor recreation — in short, by properly managing wildlife resources — accrue to the public at large as well as to those who hunt and fish.

This is made most apparent by a study completed during the year of the economic benefits derived by the people of Massachusetts from hunting and fishing. The study, done by the University of Massachusetts and to be published in the next fiscal year, shows that sportsmen in Massachusetts contribute about 110 million dollars a year to the general economy through their purchases instigated by hunting, fishing or trapping. Around one million dollars of this comes to the state sales tax revenue, and about 1½ million to sportsmen's license revenue.

Thus, preservation of our wildlife resources, the base of this "big business", is important to all citizens of the Commonwealth.

Sportsmen, through this expenditure, contribute a monetary value to the "gross product" of the Commonwealth more than ten times what is available from license revenue to insure its continuation. It is the board's opinion that there is sound reason to increase the funds available to insure the future of our wildlife resources by utilizing part or all of that portion of the sales tax revenue contributed directly by hunting and fishing equipment purchases. Legislation to this end should be seriously considered.

It is abundantly clear that license revenue alone cannot hope to get the job done. The first $800,000 bond issue to acquire wildlife lands and waters is expended, and resulted in acquisition of 3,760 acres and the encumbering of some additional acreage. Another bond issue is completely devoted to construction of the new hatchery at Quabbin. Now we are faced with an additional one-million dollar bond issue for lands and waters and it is quite evident that the license revenue's ability to meet such payments is past.

Members of the Board pictured above are: top row, left to right, Harry C. Darling, Chairman, East Bridgewater, Bradlee E. Gage, Secretary, Amherst; bottom row, left to right, Martin H. Burns, Newbury, Edward J. Tierney, Pittsfield, and Henry J. Colombo, Wilmington.

If we are going to take advantage of this to set aside the land and waters areas that must be acquired if we are to have outdoor recreation places in the future, financial assistance must come from sources other than sportsmen's funds.

It is only logical that the sales tax, heavily contributed to by sportsmen, be a source of such help. It is also logical that other public funds be used as well, since other members of the public enjoy these areas most of the year while hunters and fishermen use them only for a few months.

Some examples of public benefits include hiking, wilderness camping, bird watching, berry picking, model airplane flying, sightseeing, snowmobiling, ice skating, horseback riding, photography and sportsman-orientated but noncontributive activities like target shooting, dog training and field trials.

Unless they incidentally possess a hunting or fishing license, these members of the public contribute not one red cent to the acquisition and development of the areas they enjoy.

And of course there is the intangible but very real value of preservation of wild areas — so important to all our citizens' well-being in today's burgeoning era of home, factory and highway construction. As some advocates of a national wilderness area system have said, "One of the chief values of wilderness is just knowing that it exists."

Some highlights of the 1968 annual report follow:

Wildlife Management

Efforts to produce readily discernible markings on day old pheasant chicks, to enable separating cocks from hens, have succeeded. Considerable savings are already being realized as a result.

Encouraging progress is being made in research to develop a strain of pheasants that can utilize now unstocked submarginal and pole-stage hardwood areas.

Usage of 22 wildlife management areas operated for public hunting increased 11 percent during the past year. Introduction of sharptail grouse to Nantucket remains experimental, with limited reproduction being reported. However, re-introduction of ruffed grouse on Martha's Vinyard appears to be succeeding.

Although a subject of some controversy, the change in deer hunting regulations involving use of antlerless permits worked well and appears to be serving its purpose. The Board approved staff recommendations in instituting this method since it appeared to be the fairest method by which all would have equal opportunity to obtain an antlerless permit, with fewer female deer being taken. That is exactly what happened, and it seems reasonable to expect that our overall deer herd will increase as a result.

Fisheries Management

A major revision of the system of allocating hatchery trout to streams was evolved during the year. At this writing, however, work is not complete and the system is not yet in use.

Quabbin reservoir creel census indicates a decline in lake trout and salmon catches, attributed to scarcity of suitable forage fish. The Metropolitan District Commission extended its permission to reintroduce smelt, and this was done. Additional numbers of salmon were also stocked. Meanwhile, the fisheries staff is actively seeking ways to control the smelt population so a repeat of former problems should not occur.

A great deal of effort was expended in a cooperative project with other states and the federal government to increase shad runs and restore Atlantic salmon in the Connecticut river. Feasability studies were also implemented on the Merrimack, and we successfully secured promises of adequate cooling devices on a proposed nuclear power plant on the Connecticut to prevent harmful effects on the fishery.

The pesticides laboratory at Westboro completed a three-year project involving analysis of 1,310 fish collected at 93 sampling stations throughout the state.

Hatchery personnel produced and liberated 400,840 pounds of trout during the fiscal year, a new high. This increase is attributed to increased water resources, a western rainbow trout now in production and the elimination of brood stocks in favor of egg purchases.

Lands and Waters

The first full year of the realty section's existence resulted in acquisition of land as previously noted. Additions were made to six existing areas and six totally new areas were established. Salt marsh, stream bank, and the site of a potential warm-water hatchery were secured as well.

Of particular note to the board are the gifts received from public-spirited sportsmen's organizations and one individual. Two clubs donated valuable land, and one individual gave land in memory of a relative. It is encouraging that such people feel that preservation of land they have enjoyed is a worthy public service.

With current funds almost expended, it is imperative that other financial sources be found to augment the limited fish and game fund, if this worthwhile program is to continue.

Information and Education

This program continued its work with the effects being seen in increased public awareness of the importance of wildlife conservation, increasing cooperation with division programs of all kinds, growing success and cooperation in legislative matters, and repeated instances of national recognition of the high quality of the overall division program. An important part of the program is information services to the public; providing kinds of information needed to properly utilize our wildlife resources. This and other phases, such as youth education, can continue and be increased only if sufficient funds are available.

The division lost its regular television series, which had been in existence for some ten years. Plans were finalized to enlarge *Massachusetts Wildlife* magazine and place it on a self-financing basis — however, necessary legislation was not approved.

It is interesting to note that our information program ranks in budget and staff-size low in the bottom third of other states nationally — yet it has consistently been the cause of Massachusetts receiving credit for having an outstanding wildlife program.

Additional Activities

The board wishes to call particular attention to the center section in this booklet called "More Than Meets The Eye." Here, a total of 32 activities conducted in cooperation with other agencies or required by various statutes, beyond the usual fish and game program, are reported.

All of these in some way involve wildlife conservation — and all in many ways represent direct public service to all citizens, whether sportsmen or not.

As most of these listed have come about in the past ten years, and the staff has not increased, they also demand increased staffing and budgeting if the division is to fulfill it responsibilities.

Respectfully submitted

Harry C. Darling, Chairman
Bradlee E. Gage, Secretary
Henry J. Colombo
Edward J. Tierney
Martin H. Burns

FISHERIES MANAGEMENT

FISHERY program activities during the past year centered on Quabbin Reservoir investigations, Connecticut River shad study, water quality studies, stream access and improvement, trout allocation to streams, pond and stream reclamation and warm-water fisheries investigations.

New projects activated include a shad study on Palmer and North rivers and an anadromous fish restoration feasibility study on the Merrimack River.

Quabbin Reservoir creel census indicates that 59,000 fishermen harvested 49,682 fish weighing 37,578 pounds during the season from April to October. Decreases in lake trout and landlocked salmon harvest were noted and attributed to scarcity of suitable forage fish. To rectify this problem the Metropolitan District Commission extended permission to reintroduce smelt, and 100,000 gravid adult smelt and 50,000,000 viable smelt eggs were planted in the reservoir and tributary streams. An additional plant of 25,000 landlocked salmon was carried out.

The objectives of the water chemistry project were modified to classify pond types according to stage of aging or eutrophication for correlation with fish productivity.

Four ponds in the Southeast District totalling 228 acres were reclaimed for trout management: Sandy Pond, Plymouth; Flax Pond, Brewster; Higgins Pond, Brewster; and Hathaway Pond, Barnstable. In addition, the Squannacook River, its tributaries, marshes and impoundments were treated with rotenone to reduce existing rough fish populations and the drainage system restocked with trout. The entire Squannacook reclamation caused an interruption of less than four weeks in fall fishing and angling was resumed briefly before the trout season on streams closed.

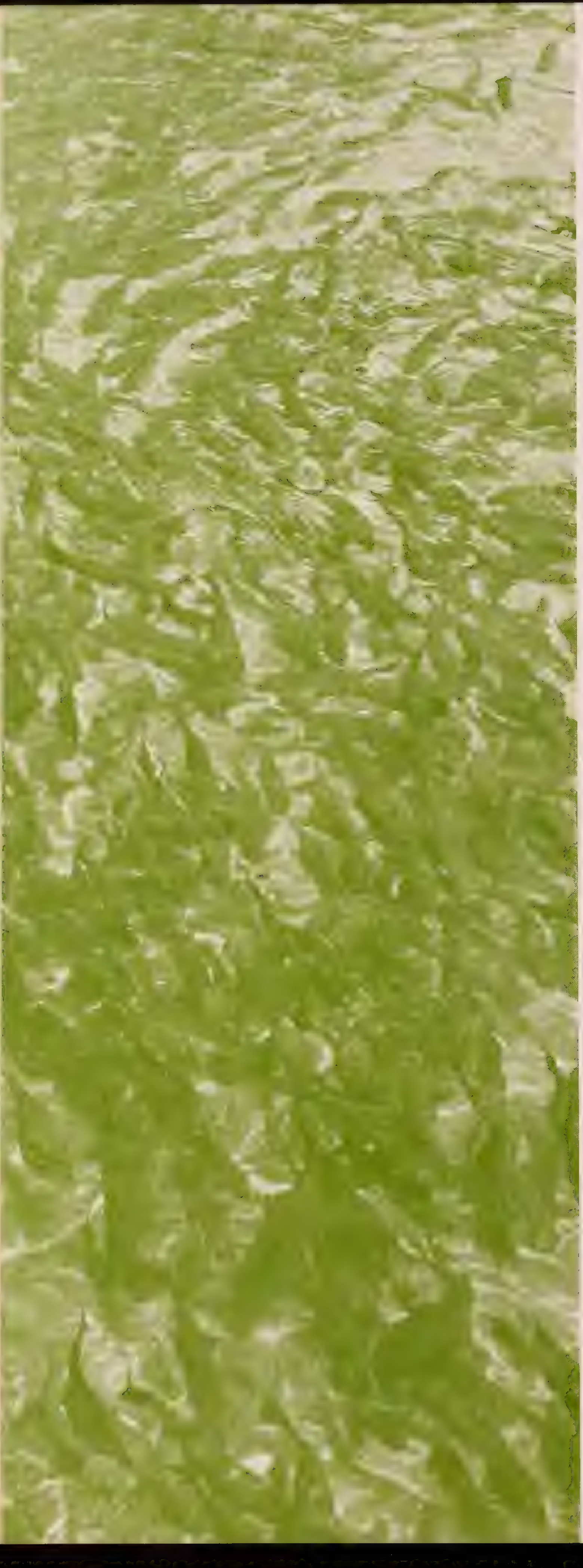
Warm-water fisheries investigations continued with emphasis on age and growth analysis and population estimates. Landlocked alewives transplanted from New Jersey to Congamond Lakes for forage in two-story pond management were found to be successfully established.

Maintenance of the two warmwater fish culture pond systems continued with 482 pounds of chain pickerel and 495 pounds of largemouth bass produced and stocked from the Merrill Pond pond system, and 1,053 pounds of largemouth bass and 248 pounds of smallmouth bass produced and stocked from the Harold Parker pond system.

The cooperative effort involving the states of Massachusetts, New Hampshire, Vermont and Connecticut and two Federal agencies, the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries, to increase shad runs and restore Atlantic salmon to the Connecticut River, was intensified. Some 5,600 Atlantic salmon smolt were stocked below the Holyoke dam. Another phase of the venture culminated in the employment of a Federal coordinator to supplement, assist, and coordinate the various state projects on the river.

Massachusetts project activities on the Connecticut River centered on a shad tagging study at Holyoke, in

Hatchery visitors, shocking boat, above, taking shad eggs, below.



which 1,000 adult shad were tagged, and the transfer of fertilized shad eggs to sections of the river above Turners Falls dam. Slightly over 2.8 million eggs obtained from Connecticut and below Holyoke were stocked to assess hatching success and growth. Of the 1.2 million eggs stocked above Turners Falls a year ago, a 70-percent hatch was observed and juvenile shad up to seven inches in length were collected at Turners Falls in mid-October which was excellent growth in a section of river to which shad have been denied access since 1798. Bottom mapping of the river between Vernon, Vermont and Turners Falls was completed. Tied in with shad population estimate studies, a creel census of the shad fishery below Holyoke was initiated.

Northeast Utilities Service Company of Hartford, Connecticut, continued to assist the Division in studies on the Connecticut River and provided two gifts of equipment to the Division, a Wang electronic calculator with program unit and a Beckman DB-G spectrophotometer.

In conjunction with Connecticut River studies and with assistance from the Office of the Attorney General, the Division prepared and presented testimony before the Vermont Water Resources Board and the Senate Subcommittee on Air and Water Pollution relative to the threat of thermal pollution posed by the application of Vermont Yankee Nuclear Power Corporation to construct and operate a nuclear-fueled steam electric station at Vernon, Vermont. The hearings resulted in agreement to construct cooling towers to eliminate adverse thermal effects to existing and planned fisheries.

Stream access and improvement work continued and intensified on the Squannacook River. Assistance from local

TROUT DISTRIBUTION FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1967 TO JUNE 30, 1968

BROOKS		BROWNS		RAINBOWS		
Under 6"	*Over 6"*	*Under 6"*	*Over 6"*	*Under 6"*	*Over 6"*	*TOTAL TROUT*
121,700	399,563	189,500	206,695	332,645	426,892	1,676,995

Total Trout Distribution 6-9"	637,731	
Total Trout Distributed 9" plus	403,919	
Total Federal Trout Dist. 6" plus	109,440	
Total Catchables (6" plus)		1,151,090
Total Fingerlings (6" Minus)		783,956
GRAND TOTAL		1,935,046

STATION POUNDAGE

Station	*Total Lbs.*	
Berkshire Hatchery	21,072	
Montague Hatchery	89,856	
Palmer Hatchery	47,780	
Sandwich Hatchery	111,900	
Sunderland Hatchery	130,232	
State Poundage		400,840
North Attleboro	6,808	
Nashua, New Hampshire	18,412	
Federal Poundage		25,220
GRAND TOTAL		426,060

(This table does not show trout retained for brood stock)

Boy Scouts greatly contributed to project progress on the river.

The pesticide laboratory in Westboro operating in conjunction with Massachusetts Health Research Institute and funded with a grant from the Federal Water Pollution Control Administration completed a three-year study involving analysis of 1,310 fish collected from 93 sampling stations throughout the state. A final report was prepared on the concentrations of DDT and metabolites DDE and DDD exhibited in fish from the major watersheds of the state and submitted to the Pesticide Monitoring Journal for publication. Applications were prepared for continuation and expansion of the project.

Trout releases from our five fish hatcheries including additions from the U.S. Fish and Wildlife Service, totaled 109,440 fish or 24,611 pounds, of which Massachusetts liberated 1,676,995 fish or 400,840 pounds. These figures also include 12,367 fish or 19,554 lbs. of brood stock.

The increased production in weight was due to several factors; increased water resources, a western type rainbow now in production; and brood stocks being released in favor of egg purchases.

Two lots of eyed trout eggs were supplied by the New York Conservation Department, through their research unit at Rome, for incubation and a check on their resistance to disease. A second project consisted of immunization of trout fingerlings by incorporating antigen into their food.

The coloration work which consisted of incorporating a 2% level of paprika in the pelleted fish food was reduced to a 1% level. This change failed to maintain the eye catching appeal of our stocking fish as observed from the higher level of this additive.

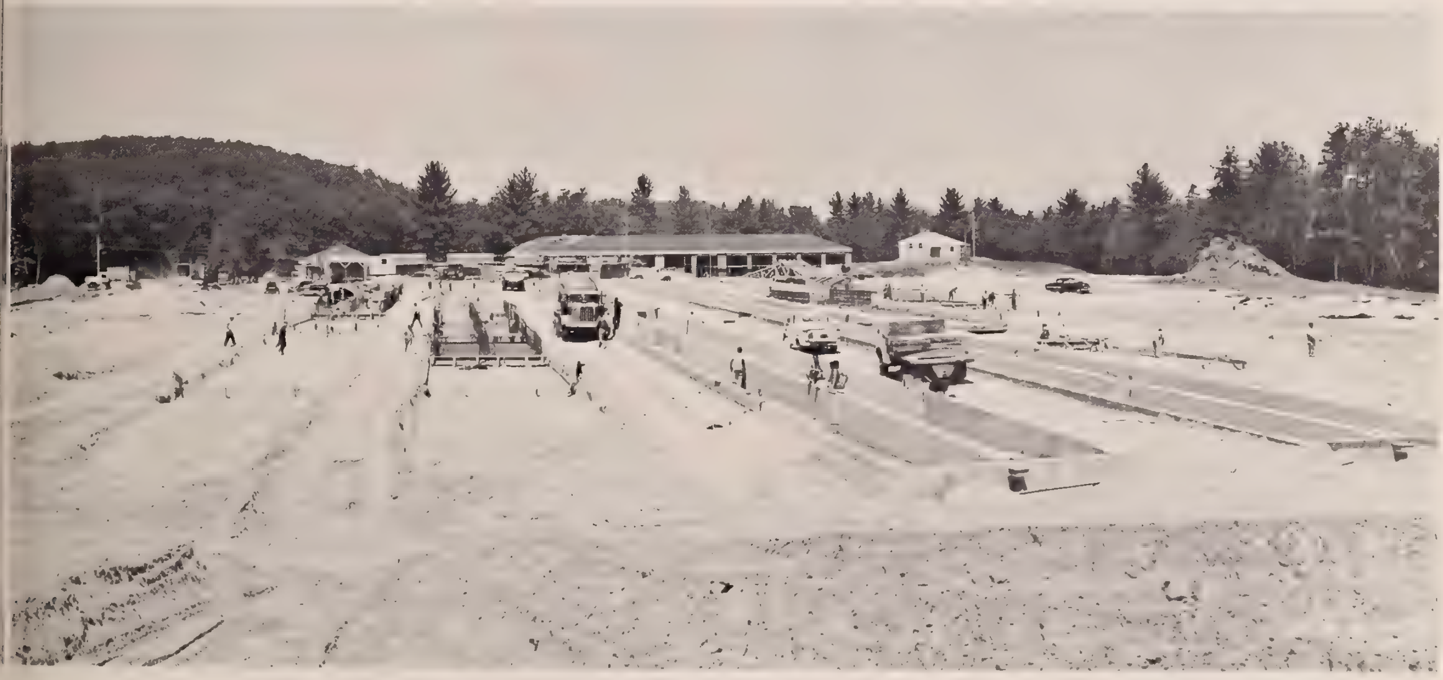
Two brands of pelleted food were used during the year and the overall results tabulated. A continuation is expected to fully valuate the results.

Construction funds were limited with no improvements except at the Sandwich hatchery where a gravel-packed well was installed at the upper end of the hatchery system. This well was equipped with a Deming electric pump with a standby gas motor for use during power failures.

The roadway at Sandwich was blacktopped for the convenience of the public visiting the plant.

Our hatcheries continue to receive many visits from organized groups of children and other special tours.

Specially constructed signs have been erected at the entrances of three of our larger hatcheries.



Quabbin hatchery — first since 1911 — nears completion in Belchertown

MORE THAN MEETS THE EY

1. *Hatch Act Chapter 220, Acts of 1965*

Inasmuch as modifications to lands bordering on inland waters can have significant effects upon fish and/or wildlife habitat, the Division of Fisheries and Game reviews all such applications and comments whenever appropriate.

2. *Massachusetts Conservation Council*

Participating by invitation, the Division of Fisheries and Game contributes to general understanding of fish and wildlife programs by informing the council of all programs and problems related to same. We participate fully in discussions of statewide conservation activities and needs.

3. *Town and Regional Planning*

The Division of Fisheries and Game cooperates with town and regional planners by furnishing comprehensive data derived from fish and wildlife inventories, and such data is assimilated by the planner into the overall long range planning for the area in question.

4. *Agricultural Stabilization and Conservation Services*

The Division of Fisheries and Game sits in an advisory capacity with other state and federal conservation agencies to review and update programs especially the Cropland Adjustment Program and the Feed Grains Program, and particularly, how they may affect fish and wildlife.

5. *U.S. Army Corps of Engineers Projects* Fish and Wildlife Coordination Acts as amended.

The Division of Fisheries and Game, in cooperation with the U.S. Fish and Wildlife Service, acting under this act, reviews all corps projects in the planning stage, assesses affect of project on fish and wildlife, and prepares detailed recommendations relating to protection or enhancement of the resource.

6. *Small Watershed Projects* Public Law 566 — Watershed Protection and Flood Prevention Act.

The Division of Fisheries and Game participates actively in this program and makes recommendations relating to location, size, scope, and uses of works of improvement contemplated under this program. Fish and Wildlife benefits or damages are ascertained and evaluated. We also coordinate with the U.S. Fish and Wildlife Service in preparation of their reports.

7. *Natural Resource Planning for Town Conservation Programs*

The Division of Fisheries and Game is a cooperative member of all Natural Resource Technical Teams which furnish technical assistance in inventoring any town's natural resources and in preparing recommendations for protection, enhancement and acquisition of same.

8. *Conservation Needs Inventory*

The Division of Fisheries and Game, after invitation by the U.S. Department of Agriculture, Soil Conservation Service, coordinates with other agencies and groups to determine and evaluate the needs of the state and areas of the state for protection and/or improvement of natural resources, particularly in rural areas.

9. *County Technical Action Panel* White House Executive Order 11307

The Division of Fisheries and Game, by invitation, has cooperated with other state and federal conservation agencies in coordination of federal programs affecting agricultural and rural area development and planning.

10. *State Committee for Conservation of Soil, Water and Related Resources*

The Director of the Division of Fisheries and Game, as a member of a State Committee, participates in encouragement of conservation efforts, in developing policies relating to conservation, in securing cooperation and assistance for other state and federal agencies and in allocation of monies and supervision of contributing programs under the authority of the Committee.

11. *Corps of Engineers Areas leased for Management* Annual Management plans as conditions of licenses.

Areas under control of U.S. Army Corps of Engineers which are licensed and used by agreement by the Division of Fisheries and Game for fish and wildlife management purposes, are required to have on file annual management plans. We prepare annually, a plan for each area indicating usage and future estimates of usage, as well as financial reports of maintenance and other expenditures.

12. *D.P.W. Highway Coordination* Instructional Memo 21-5-63- Bureau of Public Roads

The Division of Fisheries and Game through the State Department of Public Works reviews all highway improvement to be undertaken with federal aid in order to safeguard fish and wildlife interests. The program offers the state fish and game agency an opportunity to evaluate the effects of highways upon fish and wildlife and their habitat and to make recommendations prior to construction pertaining to protection or methods of mitigation of losses to the resources.

13. *Department of Public Works Highway Coordination* Chapter 470, Acts of 1966

The Department of Public Works is directed that in highway construction, advance planning shall provide for the protection of water resources, fish and wildlife, and recreational values.

14. *Department of Public Works Scenic Highway Program* Highway Beautification Act

The Division of Fisheries and Game has coordinated with other agencies to nominate deserving Massachusetts highways as "Scenic Roads and Parkways." U.S. Department of Commerce program has evolved which contributes federal aid for acquisition of roadside areas valued for aesthetics, recreation and access to natural or other highly desirable areas.

15. *Coastal Wetlands Protection* Chapter 768

The Division of Fisheries and Game coordinates with the Department of Natural Resources as a member of the coastal wetlands advisory committee, relative to protection of coastal wetlands. A report on evaluation of wildlife and wildlife habitat is prepared by us based on our records and on field investigation.

16. *Federal Power Commission* — Fish and Wildlife Coordination Act.

The Division of Fisheries and Game in cooperation with the U.S. Fish and Wildlife Service, reviews all projects licensed by the Federal Power Commission to assess effects of such projects on fish and wildlife and to make recommendations relating to protection or enhancement of same

17. *Massachusetts Pesticides Board* Chapter 521, Acts of 1962 as amended.

Diverse Duties of State Wildlife Agency Perform Little-Known Services to Citizens

Members include Commissioner of Agriculture, Commissioner of Public Health, Commissioner of Natural Resources, Commissioner of Public Works, Chairman of State Reclamation Board, Director of Fisheries and Game. Purpose to establish rules and regulations for use of pesticides within the Commonwealth, serve as a licensing agency and act on all matters pertaining to pesticides.

18. *Massachusetts Public Access Board* Chapter 715, Acts of 1962 as amended.

Member agencies include Department of Natural Resources, Department of Public Works, Metropolitan District Commission, Division of Motor Boats and Division of Fisheries and Game. Purpose is for acquisition and development of public access areas to inland and coastal waters of the Commonwealth.

19. *Federal Aid to Wildlife Restoration Act known as the Pittman-Robertson Act*

The program provides 75% reimbursement on authorized projects pertaining to wildlife research, management and acquisition. In fiscal 1967 this assistance amounted to $127,000.

20. *Federal Aid to Fish Restoration Act, known as the Dingell-Johnson Act.*

This program provides 75% reimbursement on authorized projects pertaining to fisheries research, management and acquisition. In fiscal 1967 this assistance amounted to over $73,000.

21. *Anadromous Fisheries Restoration Act*

This public law 89-304 passed in 1965 and provides 50% reimbursement on authorized projects pertaining to anadromous fisheries research and management. A major Connecticut River investigation has been initiated under this program.

22. *1968 Appropriation Act for Research on Migrating Birds other than Waterfowl*

This is a 100% reimbursement program which Massachusetts will participate in.

23. *U.S. Department of the Army* Cooperative Plan Agreement for Conservation of Fish and Wildlife

The Massachusetts Division of Fisheries and Game together with the U.S. Fish and Wildlife Service have coordinated with U.S. Army personnel at Fort Devens, Massachusetts and have prepared a cooperative plan agreement, fish and wildlife management plans and have worked together to create fishing and hunting opportunities and to improve existing opportunities for both army personnel garrisoned at Fort Devens and civilians recreating on U.S. Army property. Plans are reviewed and updated each year.

24. *U.S. Department of the Air Force* Air Force Regulation 126-2, 1965.

The Massachusetts Division of Fisheries and Game and the U.S. Air Force have coordinated to prepare a management and conservation plan for fish and wildlife on Air Force installations. Plans are being implemented and technical assistance rendered to create and improve upon recreational fish and wildlife opportunities. Plans are reviewed, updated and redrafted each year.

25. *Connecticut River Fisheries Compact*

The objective of this program is to conduct joint research studies on Connecticut River anadromous and resident fish populations and in engineering structure on the river as they relate to fisheries resource. Included on the compact along with Massachusetts Division of Fisheries and Game are the wildlife agencies of Vermont, Connecticut and New Hampshire and the U.S. Fish and Wildlife Service.

26. *U.S. Department of Public Health*

Commencing in 1962, the Massachusetts Health Research Institute under the direction and control of Massachusetts Division of Fisheries and Game.

27. *Atlantic Waterfowl Council*

This organization is represented by Fisheries and Game Directors and Waterfowl Technicians of the seventeen Atlantic States. The purpose is to review and institute programs on waterfowl research and management which are of mutual concern to the states and the resources. Massachusetts has been extremely active in this program since its inception in 1952.

28. *Interagency Committee on Natural Resources*

This committee representing all state recreational agencies, was originally established in 1943 by order of the Governor to review all the outdoor recreational programs of the Commonwealth. Following the publication of a state recreation report, the committee was then reorganized to review and act on all outdoor recreation projects submitted to the state designee of the Governor for approval under the BOR program.

29. *Land and Water Conservation Fund Act of 1965* Public Law 88-578

This federal act provides assistance in preserving and developing outdoor recreation resources. Funds are available to state outdoor recreation agencies, to assist in financing approved projects. The Division of Fisheries and Game has prepared and submitted projects for approval.

30. *Land Law Review Committee*

This is a working committee on the International Association of Game, Fish and Conservation Commissions with the objective of revising federal and state laws and policies pertaining to the use of federal lands. From these studies, recommendations are made and legislation promulgated to improve existing laws and policies and protect state rights. The Director of Massachusetts Division of Fisheries and Game is an active member of this committee.

31. *Tourist Promotion*

The Division of Fisheries and Game actively assists the Division of Vacation Travel of the Department of Commerce and Development in preparing promotional materials, answering inquiries, and generally promoting the fishing and hunting attractions of the Commonwealth.

32. *Conservation Education*

The Division has responsibility for reservations, instruction, program planning, promotion, and overall supervision of the Massachusetts Junior Conservation Camp in cooperation with Massachusetts Conservation Inc., and aids the Department of Education's Office of Conservation Education through representation on the Massachusetts Advisory Commission for Conservation Education. The Chief of Information and Education is an active, appointed member of this commission.

WILDLIFE MANAGEMENT

Airboat used for waterfowl banding

RESEARCH conducted over the past three years on the game farms has paid off in regards to sexing day-old pheasant chicks by total down coloration. The tedious task of sexing day-old pheasants by eye-field technique is a thing of the past. The development of this new sex-linkage method will result in great savings to the sportsmen.

Progress has continued on research to develop a strain of pheasants which would be acclimated to stocking in submarginal and pole-stage hardwood areas. Numerous crosses of various pheasant species have been made, resulting in approximately 100 hybrids being successfully reared. Several releases have been made of surplus birds. The work schedule will continue for several years to further enable specific selection of those birds demonstrating desirable traits such as budding, tree roosting, etc.

Twenty-two wildlife management areas were maintained for recreational use for hunters, fishermen and the general public. Shrubs and wildlife food crops were planted, roads and trails constructed, signs erected, forest improvements made and dams, bridges, buildings and roads maintained on these areas.

A study of the use on 13 of these wildlife management areas indicated 54,907 hunter trips were expended in 1967. This was an increase of 11 percent over the 1966 effort. Peak usage occurred on opening day and on Saturdays. On the peak days the greatest number of hunters were on the area at opening hour and stayed approximately 2½ hours. Multiple use of these management areas continued to be high, with such uses as field trials, dog training, fishing, wilderness camping, berry picking, bird watching, conservation education, sightseeing, parking, snowmobiling, horseback riding and ice skating rating high.

There was a 32 percent increase in the number of mourning doves heard calling on spring census routes. Plantings of annual grains on the Crane, Myles Standish and Northeast management areas continued to attract mourning doves during the fall. The number of doves on the Myles Standish area increased 17-fold when the acreage of grain was increased from six to 76 acres.

The biennial quail census was conducted in Barnstable, Plymouth and Bristol counties. Counts of whistling quail were slightly higher in all counties than counts taken in 1965.

The wild turkey has been established in the Quabbin Reservation area and remains experimental in Mt. Washington, Becket, Barre and Plymouth. Reproduction and recruitment by the Quabbin flock was excellent and the 1968 breeding population was the highest since the project started. Recruitment of young was sufficient on other areas to maintain but not significantly increase existing flocks. The Quabbin flock has begun to spread into the towns of Leverett and Shutesbury.

The 1966 introduction of sharptailed grouse to Nantucket remains in the experimental stage. Limited reproduction was reported in the summer of 1967 and small flocks were observed during the following winter. Breeding activity was reported in the spring of 1968.

The introduction of ruffed grouse to Martha's Vineyard appears to be progressing very well.

The annual harvest of beaver was 1,425.

For the first time in Massachusetts deer hunting history, major changes in the rules and regulations for hunting of deer were in effect. Only antlered deer with antlers three inches or longer were legal deer. Anterless deer were harvested by permit only.

The compulsory deer check at division-operated deer checking stations continued.

During the 1968 season hunters reported harvesting 1,193. Of these deer, archers reported a harvest of 21 deer.

Anterless deer hunting permit holders reported taking 301 deer.

The following is a break-down of deer mortality reported from January 1, 1967 to December 31, 1967.

CAUSE	*NUMBER*	*PER CENT*
Motor vehicles	334	65%
Dogs	62	12%
Unknown causes	41	8%
Illegal	48	9%
Crop damages	4	1%
All other causes	19	4%

Survival of wood duck ducklings at Great Meadows is poor. Only 20 percent of tagged ducklings could be traced to the flight stage. Those examined appear to be retarded in growth. Banding and study of wood ducks has been expanded to include nine other areas in central Massachusetts. Recruitment of young birds to the breeding population appears to be below normal levels on most of the areas studied where ducklings had been tagged the previous nesting season.

A total of 149,500 ducks and 9,500 Canada geese were counted on the winter inventory flights January 9 and January 11, a 42-percent increase over the 19-year average in total number of wintering waterfowl. Most of the increase is due to larger winter concentrations of sea ducks which accounted for 101,200 ducks in the total count.

Eight hundred ducks, including blacks, mallards, wood ducks, blue-winged teal and green-winged teal were banded during the summer, using an airboat rigged with lights. The banding was done throughout the state on rivers, ponds and marshes where waterfowl could be collected at night. The airboat is a 14-foot fiberglass model powered by a 125 H.P. Lycoming aircraft engine. Light is provided by 500 watt quartz lamps powered by a 3,000 watt generator. This summer banding program will be continued next year.

A total of 2,217 ducks were banded along the coast from January 20 to March 1, 1968. During the past three winters, state personnel have banded 5,000 black ducks as part of the data-gathering process for the special late black duck season.

Canada goose nesting studies are being conducted on the Sudbury-Framingham Reservoir system. A gosling transplant program using birds produced on the reservoir has been conducted for the past two summers. To date, 110 birds have been released in central Massachusetts and Berkshire County. Thirteen adult birds are included in the total.

A division biologist assisted in a "wing-session" at the Patuxent Research Center for the fifth consecutive year. Over 20,000 wings were identified, sexed and aged to provide part of the data used in setting waterfowl regulations.

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

Wild Turkeys

The Unit completed its investigations on the introduction and survival of wild turkeys during the year. During the study populations were introduced and studied in Quabbin Reservation, Mount Washington, October Mountain, Myles Standish State Forest and the Barre area. The Quabbin and Mount Washington birds appear to have become established and have provided important information on survival in this state. The Division of Fisheries and Game has assumed the responsibility of further establishment efforts.

Avian Sterilization

Screening of chemicals for effectiveness as sterilants and studies of potential physiological markers has continued. The ecology study of Muskeget Island and its breeding colony of gulls is providing base-line information for future work on gull control. The effect of mestranol, the key ingredient in human birth control pills, has been studied, using Japanese Quail, in the laboratory. Permanent sterility was attained and a new study on the effect of mestranol on reproductive performance of pigeons, mice and insects, under laboratory conditions, has been initiated.

Woodcock

A study completed this year found some evidence that adult and juvenile males arrive on the breeding grounds at different times. Surplus males will occupy territories abandoned between early April and early May. Half of the male breeding population are adults and two periods of female activity were found coinciding with the two peaks of male courtship discovered earlier.

A second printing of Dr. Sheldon's woodcock book is planned.

Waterfowl

A literature review and design of methodology for evaluating toxicity of lead shot among mallards was completed. A new study of the ability of hunters to identify waterfowl species on the wing was initiated and is nearing completion. Two studies of waterfowl in western Massachusetts, involving wood-ducks and Connecticut River waterfowl habitat have been started.

Fruit-eating Birds

Field research was completed on the breeding and nesting biology of the Baltimore oriole and a study of feeding behavior of robins is now underway.

Nantucket Deer and Sharp-tailed Grouse

A study of the use of various vegetative cover types by white-tailed deer on Nantucket Island has been operative and the field aspects of this study are nearing completion. Introduced sharp-tailed grouse on the Island avoided detection during the winter, but observation of courtship behavior in the spring indicates that there has been some survival and establishment is yet possible.

Ruffed Grouse

Studies of the energy balance in ruffed grouse during winter have been initiated and telemetry studies of grouse winter and spring behavior continue to provide valuable information on the means this species uses to conserve energy and obtain food under severe climatic conditions.

Highway Impoundments

A study of potential wildlife use of impoundments created by Interstate 91 between Northampton and South Deerfield was initiated and this topic is expected to be enlarged upon in future studies by University faculty.

Beaver Project

Dr. Joseph S. Larson joined the Unit as Assistant Leader in November and has continued his studies of beaver which he initiated at the University of Maryland. Studies of improved means of sexing beaver, population dynamics and social behavior are among the general objectives.

GAME DISTRIBUTION July 1, 1967 - June 30, 1968

Pheasant		*Hens*	*Cocks*	*Total*
Adults:	Spring and summer liberations	7,274	793	8,067
Young:	August liberations (12 weeks)	2,345	9,803	12,148
	October-November liberations (17-25 weeks)	96	43,078	43,174
	Sportsmen's Club Rearing Program	0	5,267	5,267
Totals:		9,715	58,941	68,656
Quail				
Adults:				168
Young:				3,705
Totals:				3,873
White Hare				
Northern Varying, purchased				2,500

INFORMATION AND EDUCATION

> "The real substance of conservation
> lies not in the physical projects of governmen
> but in the mental processes of citizens"
> — Leopold

FOR the past 20 years, the Division of Fisheries and Game has made planned, organized and formal efforts to serve the public with needed information, to report progress of its own programs and to educate both today's adults and tomorrow's to the importance of wise use of natural resources. In fact, twice during the past two decades, the information and education program has received praise from state government study teams, who held it worthy of emulation by sister agencies.

Despite being one of the lowest budgeted, smallest-staffed efforts of its kind in the country, the program has received widespread recognition among information and education professionals in wildlife conservation agencies of other states and the federal government.

Of direct interest to those who provide the revenue upon which it operates is the fact that the Division of Fisheries and Game regularly furnishes, through its information program, complete and detailed reports of its activities, receipts, expenditures and policies to all interested enough to get on the free mailing list or to ask for specific publications such as the annual report. The agency also meets frequently with public organizations to discuss its programs. More than 300 such meetings were participated in by staff people, districts and others during the past fiscal year.

Frequent news releases keep people informed through newspapers, magazines, radio and tv. A total of 143 were issued this year, including 86 releases by the information section, 20 tv news films and 37 releases by the districts.

The bi-monthly magazine MASSACHUSETTS WILDLIFE continued, with circulation reaching 38,554 at the close of the fiscal year. Approximately 3.9 individuals read each copy mailed. Plans to expand the magazine and to change to a fee system were finalized, but lack of legislation prevented action.

This year another approach to information efforts was tried, with a series of eight special "tip" releases sent to weekly papers and a pair of special "director's reports" sent to sportsmen's clubs. Response to both was favorable.

Assistance to local and national press totalled some 180 contacts. Numerous photos were supplied, as was information and printed material, and upon 12 occasions special feature articles were written and issued at key times.

The section's audio-visual office took guest spots on television on 12 occasions, while districts handled three tv appearances and six radio spots.

A total of 343 film bookings were processed, with 27,440 people viewing division films. This activity is falling into disuse, however, since budget-request cuts have prevented equipment acquisition and film purchase, thereby eliminating film production and acquisition of outside-produced films. Most of the films formerly in the library have been withdrawn because of wear and the remainder should be.

A total of 460 awards were presented through the freshwater sportfish awards program, (See all-time fish records tabulation inside back cover). The program this year was in cooperation with the Division of Tourism of the Department of Commerce and Development.

The information section also assisted that division to produce a new, colorful "Outdoor Vacation Guide" as an

LANDS AND WATERS ACQUISITION

THE first full year of the realty section's existence resulted in 3,760 acres of land acquired to preserve the future of recreation. It included additions to existing areas, establishment of several new areas and fisherman access to ponds and rivers. It also included several gifts of land from public-spirited sportsmen's clubs and one individual. In addition to acquisitions, fisherman-access leases were renewed on the Westfield, Millers, Farmington and Squannacook rivers.

Additions to existing areas:

Northeast Wildlife Management Area; nine new acquisitions totalling 265 acres with six more in the process of finalizing.

Squannacook River Wildlife Management Area; one new acquisition of ten acres with five more parcels in the process of acquiring.

Swift River Wildlife Management Area; two acquisitions totalling 672 acres bringing the total acreage on this area to approximately 900 acres with six or seven more potential acquisitions awaiting additional funds.

Quaboag River Wildlife Management Area; three new acquisitions totalling 73 acres raising the total acreage to approximately 700 acres.

Chester Wildlife Management Area; one new acquisition totalling 105 acres. Total acreage approximately 600 acres.

Phillipston Wildlife Management Area; one acquisition of 348 acres bringing the total to approximately 1,500 acres.

[illegible]

aid to tourist promotion in the Commonwealth.

Eleven exhibits at sportsmen's shows and fairs were either established or serviced at Topsfield, Bedford, Worcester, Barnstable, Becket, Springfield, Greenfield, Southboro, Gardner and Boston.

Press tours of key division activities were conducted for some 18 members of the press, and a "show me" tour for about 45 people was conducted on the Squannacook River.

Throughout the year a major international professional awards program was conducted for the American Association for Conservation Information.

Youth education was directly served through continued participation in the Massachusetts Advisory Commission for Conservation Education, and the operation of the Massachusetts Junior Conservation Camp which graduated 143 boys.

The usual thousands of letters, requests for literature, posters, and other division printing were handled.

New areas established:

Cheshire Wildlife Management Area; in Cheshire, is composed mainly of open farm land and has all the necessary habitat requirements to establish a farm-game area in a section of the state where it is greatly needed. Three purchases were made totalling 450 acres with three more purchases in process.

New Braintree Wildlife Management Area; two purchases for a total of 380 acres made with two and possibly three others in the process. This is another area which lends itself admirably to management for farm game.

Leicester Wildlife Management Area; contains in the one purchase that was made, 327 acres with another parcel of over 100 acres in the process of acquisition. This area lends itself to the development for and management of a farm game area.

Millers River Wildlife Management Area; this is a newly established management area and is actually in two sections with the 4,000-acre Birch Hill Wildlife Management Area between. Two purchases totalling approximately 220 acres and including over a mile of river bank were made in Winchendon. On the other end of the Birch Hill Area in Athol and Royalston, 500-plus acres were purchased including over five miles of river frontage. Except for a few small isolated parcels this purchase guarantees the sportsmen access to the river from the old mill site in South Royalston to the mills in Athol.

Becket Wildlife Management Area; one acquisition consisting of 234 acres of deer habitat located in one of the better deer areas in the Berkshires.

Savoy Wildlife Management Area; one acquisition of 40 acres in excellent deer country with two more purchases consisting of several hundred acres in the process.

New acquisitions other than wildlife management areas:

A potential warm-water hatchery is assured with purchase of 70 acres in Rochester. An access area to Lake Mascuppic in Dracut was acquired. In Royalston, 122 acres on Lawrence Brook were purchased, plus another 39 acres on the same brook in Winchendon. In Rutland, 80 acres on the East Branch of the Ware River were acquired.

A total of 133 acres of salt marsh in Ipswich, Essex and Newbury was acquired.

Gifts of land:

The Marblehead Fish and Game Club purchased and donated a key parcel of land within the existing Northeast Wildlife Management Area. The Audubon Sportsmen's Club donated 250 acres in Spencer, and Mr. Lester B. Woodbury of Springfield presented 27 acres of salt marsh in Ipswich, in memory of his mother.

Financial Report, July 1, 1967 To June 30, 1968

HOW THE SPORTSMEN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	3304-01	$118,126.88		
Board of Fisheries and Game	3304-01	992.20	$119,119.08	5%
Information-Education	3304-01	—	78,914.76	3%
FISHERIES PROGRAMS				
Fish Hatcheries	3304-42		347,992.29	15%
Fisheries Management	3304-42	141,710.09	—	
**Fish Restoration Projects	3304-47	40,065.03		
Fisheries Management	3304-51	99,319.04		
Fisheries Research Coop. Unit	3304-55	10,000.00		
***Anadromous Fish Restoration	3304-62	4,309.70	295,403.86	13%
WILDLIFE PROGRAMS				
Game Farms	3304-51	—	279,910.01	12%
Wildlife Management	3304-51	99,319.04		
*Damage by Wild Deer and Moose	3304-41	7,135.39		
Wildlife Research Coop. Unit	3304-44	7,832.06		
**Wildlife Research Restoration	3304-53	179,143.27	293,429.76	12%
CONSTRUCTION				
*Trout Hatchery, E. Sandwich	3304-43	25,807.77		
**Southeast District Storage Bldg.	3304-53	14,965.00		
Central District Hdq. Building	3304-56	14,985.60		
*Quabbin Fish Hatchery	3304-63	833.13		
*Quabbin Fish Hatchery	7801-01	310,450.44	367,041.94	15%
LAND ACQUISITION*	7801-02	—	415,784.42	17%
LAW ENFORCEMENT				
Public Hunting Grounds	3308-07	11,070.00		
Conservation Officers Salaries and Expenses	1003-00	182,742.00		
OTHER — Office of the Commissioner	1001-02	2,500.00	196,312.00	8%
GRAND TOTAL			$2,393,908.12	100%

RESERVE IN INLAND FISHERIES AND GAME FUND June 30, 1968: $249,948.25

*Continuing Appropriations
**75% Reimbursable by Federal Funds
***50% Reimbursable by Federal Funds

APPROPRIATIONS & EXPENDITURES

Account No. & Title	Appropriation	Expenditures & Liabilities	Reverted
3304-01 Administration	$ 199,318.00	$ 198,033.84	$ 1,284.16
3304-42 Fisheries Management	500,511.00	489,702.38	10,808.62
**3304-47 Fish Restoration Projects	44,495.00	40,065.03	4,429.97
3304-51 Wildlife Management	486,073.00	478,548.09	7,524.91
**3304-53 Wildlife Restoration Projects	198,435.00	194,108.27	4,326.73
3304-56 Renovation Central District Headquarters Building	15,000.00	14,985.60	14.40
***3304-62 Anadromous Fish Restoration Projects	7,500.00	4,309.70	3,190.30
	$1,451,332.00	$1,419,752.91	$ 31,579.09
	Continuing Appropriations	*Expenditures*	*Balance Forward*
3304-41 Damage By Wild Deer and Moose	$ 14,144.82	$ 7,135.39	$ 7,009.43
3304-43 Certain Construction & Improvements to Trout Hatchery, East Sandwich	57,467.25	25,807.77	31,659.48
3304-63 Construction, Quabbin	350,000.00	833.13	349,166.87
7801-01 Fish Hatchery	1,198,778.05	310,450.44	888,327.61
7801-02 Land & Waters for Fish & Wildlife Management Purposes	794,534.20	415,784.42	378,749.78
	$2,414,924.32	$ 760,011.15	$1,654,913.17

**75% Reimbursable Federal Funds
***50% Reimbursable Federal Funds

SUMMARY OF FISH AND GAME INCOME

Fishing, Hunting and Trapping Licenses	$1,511,116.00*
Special Licenses, Trap Registrations, Tags and Alien Gun Permits	6,628.75**
Rents	3,195.00
Misc. Sales	7,809.20
Pittman-Robertson Federal Aid	122,013.08
Dingell Johnson Federal Aid	75,116.70
Anadromous Fish Projects Federal Aid	4,716.38
Court Fines	8,465.86
Archery Stamps	3,637.00
Refunds Prior Year	470.42
TOTAL:	$1,743,168.39

ANALYSIS OF SPECIAL LICENSES

TYPE OF LICENSE	*NUMBER ISSUED*	*RECEIP*
TRAP REGISTRATIONS:		
Initial	71	$ 71.00
Renewal	497	257.75
FUR BUYERS:		
Resident	23	230.00
Non-Resident	2	200.0
TAXIDERMIST:	63	315.0
PROPAGATORS:		
(Special Fish)		
Initial	20	73.0
Renewal	189	545.0
(Fish)		
Initial	15	75.0
Renewal	74	222.0
(Birds & Mammals)		
Initial	85	425.0
Renewal	330	990.0
(Dealers)		
Initial	6	30.0
Renewal	86	258.0
Additional	528	528.0
(Ind. Bird or Mammal)		
Initial	37	37.0
Renewal	58	29.0
SHINERS FOR BAIT:	194	970.0
FIELD TRIAL LICENSES:	3	30.0
QUAIL FOR TRAINING DOGS:		
Initial	18	90.0
Renewal	46	138.0
ALIEN GUN PERMIT:	42	94.5
COMMERCIAL SHOOTING PRESERVES:	10	500.0
" " Tags	1,050	
" " Posters	600	
Game Tags	5,040	
Fish Tags	15,500	489.5
TRAPPING CERTAIN BIRDS:	3	15.0
MOUNTING PERMITS:	16	16.0
TOTAL:		$6,628.7

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Licenses			*Price*	*Number*	*Gross Amount*	*Fees Retained By Town Clerk Or City*	*Net Returned To State*
Series	1	Res. Cit. Fishing	($ 5.25)	117,467	$ 616,711.75	$29,160.25	$ 587,551.50
"	2	" " Hunting	(5.25)	62,948	330,466.50	15,597.50	314,869.00
"	3	" " Sporting	(8.25)	50,814	419,215.50	12,557.50	406,658.00
"	4	" " Minor Fishing	(3.25)	15,498	50,368.50	3,854.25	46,514.25
"	4-A	" " Female Fishing	(4.25)	20,983	89,177.75	5,210.00	83,967.75
"	5	" " Minor Trapping	(3.25)	208	676.00	51.25	624.75
"	6	" " Trapping	(8.75)	456	4,016.25	111.00	3,905.25
"	7	Non-Res. 7 day Fishing	(5.25)	1,957	10,278.75	484.50	9,794.25
"	9	" " Fishing	(9.75)	2,750	26,829.00	670.00	26,159.00
"	9	Alien Fishing	(9.75)	595	5,801.25	148.50	5,652.75
"	10	Non-Res. or Alien Hunting	(16.25)	1,635	26,605.50	331.00	26,274.50
"	12	Duplicate Licenses	(.50)	2,906	1,453.00	.00	1,453.00
"	15	Res. Cit. Sporting	(Free)	19,712	—	—	—
"	17	" " (Old Age Asst.) Paraplegic and to the Blind	(Free)	1,213	—	—	—
		TOTAL:		299,142	$1,581,599.75	$68,175.75	$1,513,424.00
					Check Returned Insufficient Funds		2,308.00
							$1,511,116.00

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS THROUGH JUNE 30, 1968

Species	*Weight*	*Length*	*Girth*	*Place Caught*	*How Caught*	*Date*	*Caught by*
Largemouth Bass	12 lbs. 1 oz.	25¾″	21¾″	Palmer River, Rehoboth	bait casting	5-9-63	George Pastick, Fall River
Smallmouth Bass	6 lbs. 12 oz.	21″		Pleasant Lake, Harwich	spinning	5-14-67	Thomas Paradise, Arlington
Northern Pike	24 lbs. 8 oz.	45½″	22″	Onota Lake, Pittsfield	live bait	1-13-67	Kris Ginthwain, Pittsfield
Pickerel	9 lbs. 5 oz.	29½″		Pontoosuc Lk., Lanesboro		- -54	Mrs. James Martin, Stockbridge
Rainbow Trout	8 lbs. 4oz.	26″	16″	Deep Pond, Falmouth	live bait	10-15-66	Roger Walker, Eastondale
Brown Trout	19 lbs. 10 oz.	31½″	22⅝″	Wachusett Res., Boylston	spinning	5-19-66	Dana DeBlois, Sterling
Lake Trout	13 lbs. 1 oz.	31″		Quabbin Res., Pelham	trolling	9-13-63	LeeRoy DeHoff, Suffield, Conn.
Shad	7 lbs. 10 oz.	25½″	19½″	Indian Head	spinning	5- -68	William Spaulding, Whitman
Channel Catfish	13 lbs. 8 oz.	30″	19″	Conn. Riv., Turners Falls	live bait	7-18-64	Robert Thibodo, Northampton
Walleye	8 lbs. 8 oz.	28½″	15½″	Quabbin Res., Hardwick		7-15-65	Joseph Schwartz, Holden
	8 lbs. 8 oz.	28½″	14¾″	Conn. Riv., Northampton	spinning	6-7-64	Peter Yeskie, Northampton
Bluegill	1 lb.	11¼″	9½″	Bog Pond, Norton	spinning	10-17-65	Robert Barrett, Stoughton
Bullhead	5 lbs. 9 oz.	22½″	11½″	Conn. Riv., Hadley	live bait	6-8-63	Mrs. Erna Storie, Chicopee Falls
	5 lbs. 8 oz.	22½″	14″	Leverett Pd., Leverett	live bait	8-2-65	Stephen Brozo, No. Amherst
	4 lbs. 9 oz.	22½″	11½″	Conn. Riv., Chicopee	live bait	9-8-65	Joseph Kida, Chicopee
Calico	2 lbs. 9½ oz.	18″	14″	Merrimack, Lowell	spinning	6-8-65	George Olsson, Lowell
White Perch	2 lbs. 4 oz.	16¾″	11¾″	Halfway Pd., Plymouth	spinning	6-9-65	Richard Rock, Kingston
	2 lbs.	16¾″	11¼″	Halfway Pd., Plymouth	spinning	6-18-66	Richard Rock, Kingston
Yellow Perch	2 lbs.	16¾″	10¾″	Grt. Herring, Plymouth	live bait	5-9-66	Anthony Scolaro, Braintree
Brook Trout	6 lbs. 4 oz.	24″	14″	Otis Reservoir, Otis	spinning	6-24-68	Thomas Laptew, Granville

RULES AND REGULATIONS

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1968.

July 1, 1967. Rules and Regulations relating to the hunting of deer in Massachusetts.

September 9, 1967. Migratory Game Bird Regulations 1967-1968.

January 8, 1968. Emergency regulations were adopted to continue all outstanding Rules and Regulations pending the promulgation of new regulations in accordance with Chapter 802 of the Acts of 1967 which amended Chapter 131 and recodified the fish and game laws.

April 8, 1968.

- Rules and Regulations relating to the taking of certain fish.
- Rules and Regulations regarding Ashfield Lake in town of Ashfield.
- Rules and Regulations relating to taking carp and suckers for sale.
- Rules and Regulations relative to public fishing grounds.
- Rules and Regulations governing the taking of fish in interstate pond, Wallum Lake, lying between Mass. and Rhode Island.
- Rules and Regulations governing the taking of fish in interstate ponds lying between Mass. and New Hampshire.
- Rules and Regulations governing the taking of fish in interstate ponds lying between Mass. and Connecticut.
- Rules and Regulations governing the sale of protected fresh water fish by licensed dealers.
- Rules and Regulations for hunting with bows and arrows.
- Rules and Regulations relating to the hunting of deer.
- Rules and Regulations relative to the tagging of deer.
- Rules and Regulations relating to the hunting of hares and rabbits.
- Rules and Regulations for trapping of birds by farmers.
- Rules and Regulations relative to the hunting and trapping of mammals.
- Rules and Regulations relative to the issuance of permits to expose poisons for the control of mammal and bird species.
- Rules and Regulations relating to the hunting of pheasants, quail, and ruffed grouse.
- Rules and Regulations to the hunting of gray squirrels.
- Rules and Regulations for public shooting grounds and wildlife management areas.
- Rules and Regulations governing the display of sporting, hunting, fishing, and trapping licenses.
- Rules and Regulations for the artificial propagation and maintenance of birds and mammals.
- Rules and Regulations for the artificial propagation and maintenance of fish.

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1968:

CHAPTER 214, ACTS, 1968: An act authorizing the carrying of firearms on Sunday for the purpose of sport target shooting.

CHAPTER 530, ACTS, 1968: An act providing for the issuance of fishing licenses to certain mentally retarded persons without payment of fees.

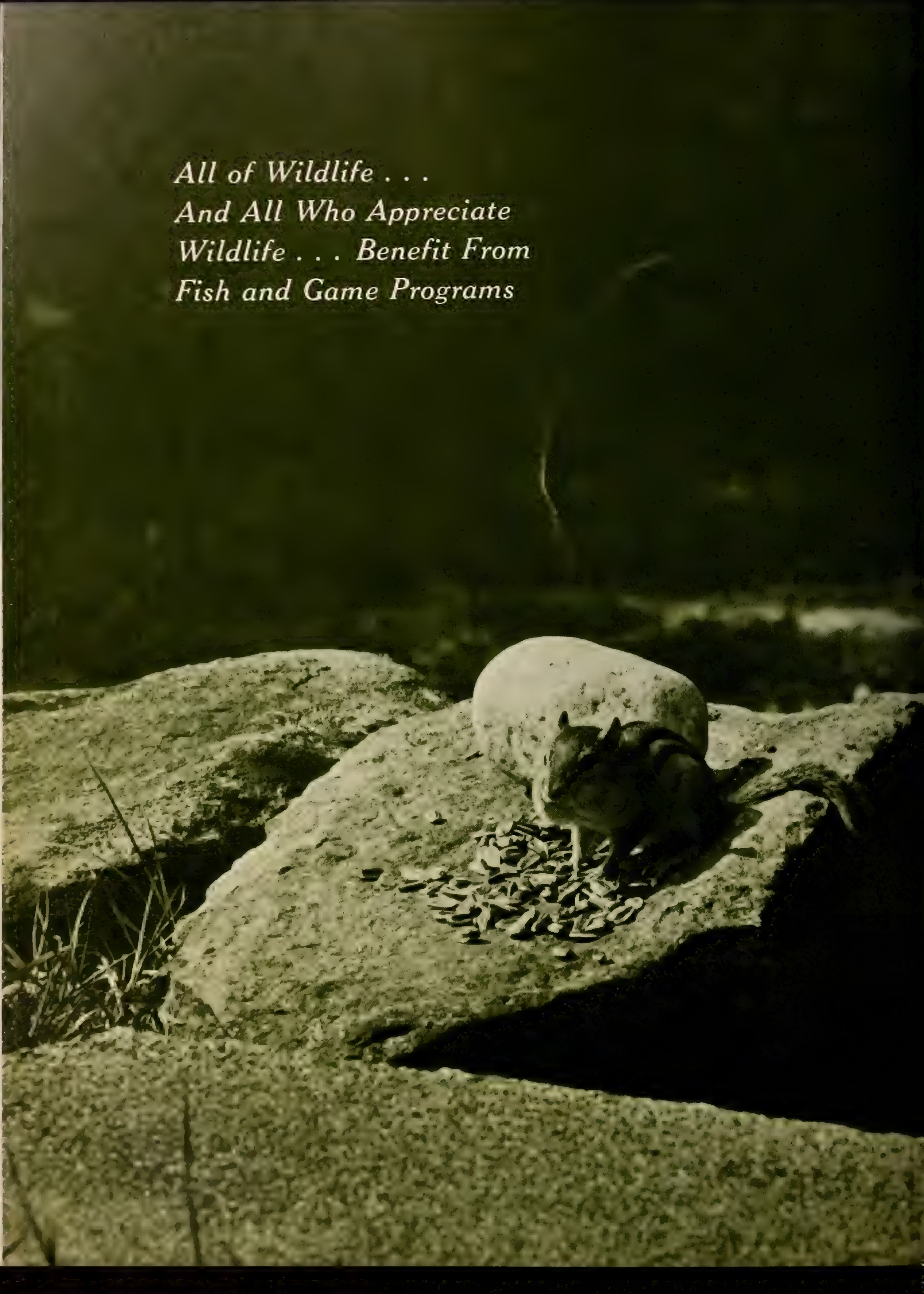
CHAPTER 534, ACTS, 1968: An act providing for the sale of the Sutton State Fish Hatchery by the Division of Fisheries and Game.

CHAPTER 550, ACTS, 1968: An act authorizing the Director of the Division of Fisheries and Game to issue special certificates allowing certain groups of mentally retarded persons to fish without payment of a fee.

CHAPTER 554, ACTS, 1968: An act temporarily authorizing the issuance to residents of the commonwealth while in the active military or naval service of the United States of special certificates without fee entitling them to hunt and fish.

CHAPTER 639, ACTS, 1968: An act to provide for an inland fisheries and game land and water acquisition and development program.

CHAPTER 718, ACTS, 1968: An act authorizing the director of the Division of Fisheries and Game to prohibit the possession or use of certain rifles in certain areas during the period between October first and April first.



All of Wildlife . . .
And All Who Appreciate
Wildlife . . . Benefit From
Fish and Game Programs

MASSACHUSETTS DIVISION OF FISHERIES AND GAME

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1969

ANNUAL REPORT — 1969

JAMES M. SHEPARD
Director

FISHERIES AND GAME BOARD

HARRY C. DARLING, Chairman
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Realty Chief

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COMMONWEALTH OF MASSACHUSETTS
Division of Fisheries and Game
104th Annual Report

His Excellency
GOVERNOR FRANCIS W. SARGENT

STATE LIBRARY OF MASSACHUSETTS
JUL 1 1970
STATE HOUSE, BOSTON

MASS. OFFICIALS

His Excellency, Francis W. Sargent, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and fourth ~~Fifth~~ Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1968 to June 30, 1969.

I commend to your attention the very real diversity of public service to all citizens of the Commonwealth demonstrated by this report and respectfully urge your consideration of the vital necessity for financial augmentation to meet increased demands for services and resulting benefits provided by these programs.

Respectively submitted,

James M. Shepard

James M. Shepard, Director

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THE BOARD REPORTS

THE quality and quantity of outdoor recreation that is dependent upon wildlife resources remains the primary responsibility of this agency, as it has been in the past.

Any attempts to meet this responsibility in this modern day and age would be futile if we didn't concern ourselves deeply with every respect and ramification of current natural resource managment.

The preservation and wise utilization of our natural resources is not only a vital necessity for esthetic reasons, but is rapidly becoming a matter of health and welfare and is, in fact, big business today.

The Division of Fisheries and Game recognizes its responsibility to the resources themselves and to the citizenry of the Commonwealth, and is forging ahead on several fronts to realize its short and long range goals.

These are some of the highlights of the 1969 fiscal year's activities of the Division of Fisheries and Game:

Fisheries Management

Anadromous fish restoration programs continue to progress through the cooperation of the states of Massachusetts, Connecticut, New Hampshire, and Vermont, and two Federal agencies, the Bureau of Sport Fisheries and the Bureau of Commercial Fisheries, both of the Department of the Interior.

Attempts are being made to restore Atlantic salmon and to increase shad runs in the Connecticut River. To this end, approximately 10,320 Atlantic salmon smolts were stocked below the Holyoke Dam in the Massachusetts portion of the river.

An extensive shad-tagging study was conducted on the Connecticut River, while some 3,000,000 shad eggs, obtained below the Holyoke Dam from the Connecticut River, were stocked in the Merrimack River and certain coastal streams in attempts to re-establish annual runs there.

Bottom-mapping and depth studies were conducted in the lower portions of the Connecticut River between Holyoke and Enfield, while a creel census of the shad fishery, initiated in 1968, was continued.

Modifications of the water quality project objectives were implemented to classify pond types according to the stage of aging or eutrophication for correlation with fish productivity. The liming of specific lakes of low fertility was combined into the project to determine if it would increase potential fertility. If proven feasible, this type of management would be of considerable value to the fisheries.

Vital studies to monitor pesticide residues in our fish were continued at length during the year. These studies were carried out through the laboratory facilities at Westboro, in the conjunction with the Massachusetts Health Research Institute and funded with a grant from the Federal Water Pollution Control Administration.

One of the highlights of the entire hatchery operation was the completion and implementation of the new Charles L. McLaughlin Hatchery in Belchertown. Construction was initiated in November, 1967. The new facility's estimated annual production of some 200,000 pounds of trout will represent an increase in our total annual production from all hatcheries of about 35 percent.

Hatchery personnel raised and liberated 382,713 pounds of trout during the fiscal year. An additional 30,591 pounds of trout were received from the U.S. Fish

Wildlife Management

Genetic research of the sex-linkage of ring-neck pheasants has paid excellent dividends. Our game culturists are now able to check day-old pheasant chicks to determine their sex with 100% accuracy, resulting in a substantial savings of time, effort and money. Previous methods of sexing day-old chicks took a great deal of time and effort, and resulted in errors as high as 25% or more. An increased number of birds can now be reared because of the accuracy of the new system, but equally important is the considerable savings in the amounts of pen space, feed and labor required for the job.

Working in cooperation with the Massachusetts Audubon Society, a dove-banding project was undertaken to increase our available data on this species both within the state and within the Eastern Dove Management Unit. Preliminary returns indicated that Massachusetts-reared birds were shot in Maryland, Virginia, North Carolina and South Carolina.

Studies on the forest-pheasant project have progressed well ahead of the original schedule outlined. excellent fertility and hatchability rates have produced a larger population of these birds than we had anticipated.

Some of the 1,000 chicks produced during the spring will be placed on an island and on two other isolated submarginal land areas for further studies on survival and adaptation.

Massachusetts deer hunters harvested 1,427 deer during the 1968 season, the second such antlered-deer-only season in the history of the Bay State. Antlerless deer could be harvested only by holders of special permits.

Wild turkey studies were continued during the year, with efforts aimed principally at censusing the populations of wild turkeys previously released in several areas in the state.

On the waterfowl front, studies continued on the wood duck and on Canada goose nesting on the Framingham-Sudbury Reservoir system. Gosling transplants continued, with releases made in Worcester, Franklin and Berkshire Counties.

A total of 1,558 ducks were banded along the coast in January and February, mainly black ducks. Winter inventory flights and special flights just prior to and during the special scaup season were made during the fiscal year.

District personnel continued extensive work on wildlife plantings and other development and maintenance work on the wildlife management areas.

Information and Education

This program continued in its efforts to inform and educate the public-at-large and sportsmen in particular of the various ramifications of the Division's diverse public-service programs and projects. Continued use was made of the several media available for dissemination of news and information; news released to all major newspapers, publication of the official magazine, MASSACHUSETTS WILDLIFE, radio and television programs or spot appearances whenever possible.

Lands and Waters

Three new wildlife management areas were established during the year, one in Conway, one in Lenox, and one in Savoy. The Conway area consists of some 525 acres of farm game land, with about 200 acres of cleared land used for pasture, the remainder in woodland. The Lenox area consists of 250 acres of flat, gently sloping land bordering the Housatonic River. The Savoy Area, 400 acres, is all wooded and has a good future potential for development and management.

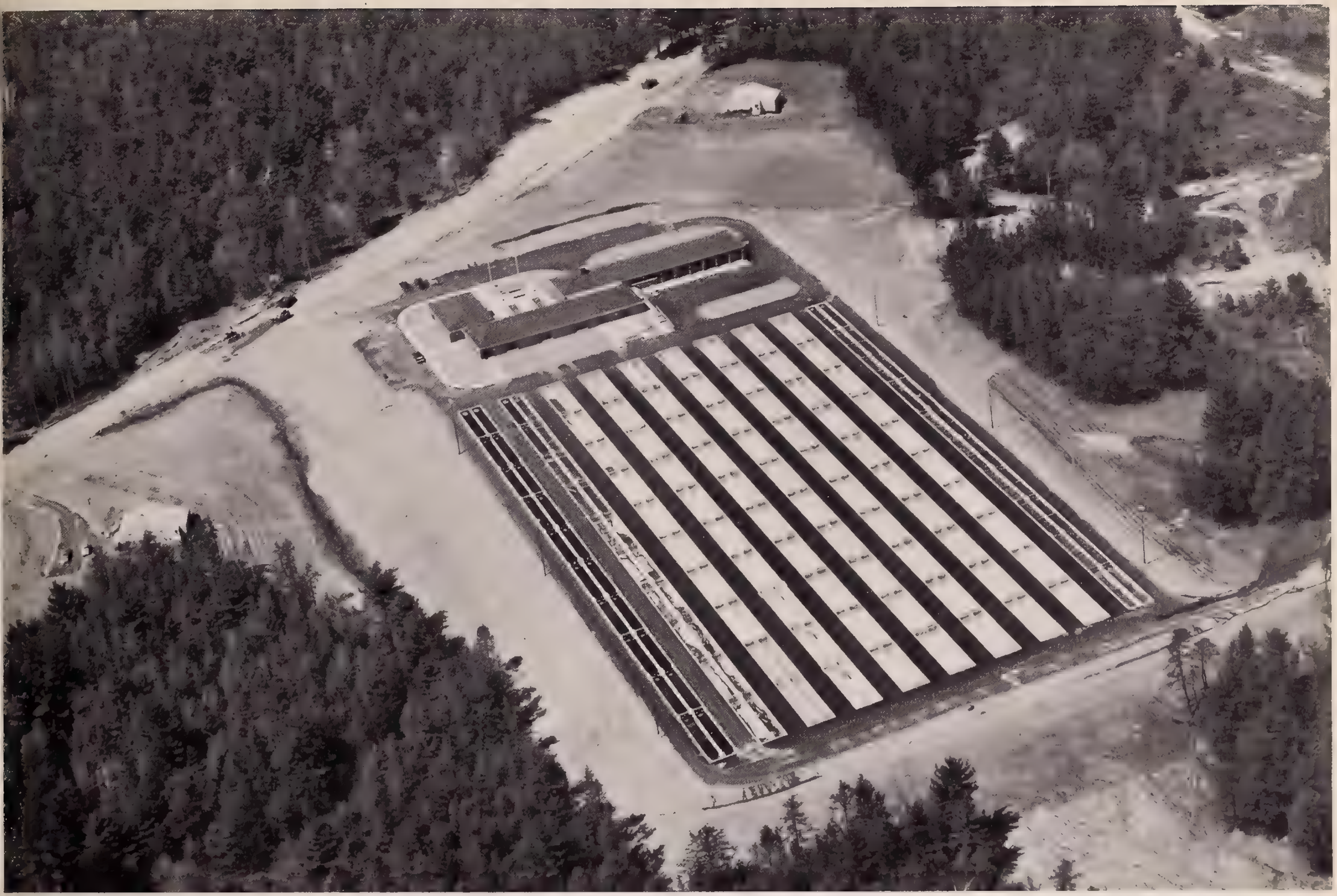
Total acreage acquired during the year was 2,514 acres, some of which consisted of areas abutting our present holdings.

Options were received for about 1,700 acres in the Rocky Gutter section of Middleboro. The Bureau of Outdoor Recreation has approved the acquisition and we are anticipating reimbursement of half the cost of the acquisition from this agency.

The Hampden County Council of Sportsmen's Clubs gave about 80 acres of land along the East Branch of the Westfield River to the division as a gift, for which we are most grateful.

Respectfully submitted,

Harry C. Darling, Chairman
Bradlee E. Gage, Secretary
Henry J. Colombo
Edward J. Tierney
Martin H. Burns



FISHERIES MANAGEMENT

THE 1969 fiscal year activities, programs and responsibilities of the fisheries section continued to progress under the following categories: Quabbin Reservoir investigations, anadromous fish restoration on Connecticut, Merrimack, North and Palmer Rivers, warmwater fisheries investigations, water quality studies, pond and stream reclamation, stream access and improvement, pesticide studies, trout allocation to state waters and streams and hatchery operations.

During the season from April to October, Quabbin Reservoir creel census indicates that 47,416 anglers harvested 41,302 fish weighing 34,868 pounds. Decreases in lake trout harvest were noted and attributed to egg and year class mortalities and scarcity of suitable forage fish. Landlocked salmon harvest increased slightly over the previous year and is probably attributed to the 1967 plant of salmon smolts entering the catch. To alleviate the scarcity of forage fish 50,000 gravid smelt and 1,000,000 viable smelt eggs were planted in the reservoir and tributary streams. An additional plant of 3,200 landlocked salmon and 20,000 nine-inch plus rainbow trout was carried out.

The anadromous fish restoration program continues to forge ahead due to the cooperative efforts involving the states of Massachusetts, New Hampshire, Vermont and Connecticut and two Federal agencies, the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries, to increase shad runs and restore Atlantic salmon to the Connecticut River. Approximately 10,320 Atlantic salmon smolts were stocked below the Holyoke Dam in Massachusetts.

Massachusetts project activities on the Connecticut River centered on a shad tagging study at Holyoke, in which 1,238 adult shad were tagged. In addition to tagging studies, approximately 3,000,000 shad eggs obtained below Holyoke Dam were stocked in the Merrimack River and coastal streams. Bottom mapping and depths were recorded in the lower Connecticut River between Holyoke and Enfield. The creel census of the shad fishery below Holyoke, initiated in 1968, for purpose of assisting in shad population estimate study, was continued.

Creel census studies initiated during the 1968 fiscal year were conducted on the North and Palmer Rivers to measure angler harvest of shad. Evaluation of shad restoration efforts through transplants of eggs and adults was continued on the Agawam and Mattapoisett Rivers.

During the 1969 fiscal year, investigations were continued on the warmwater fisheries which included age and growth analysis, population estimates, landlocked alewife transplant for forage in two-story pond management and the effect of weed control chemical use on pond fish populations.

Maintenance of the two warmwater fish culture pond systems continued with 231 pounds of chain pickerel and 332 pounds of largemouth bass produced and stocked from the Merrill Pond system, and 859 pounds of large-mouth bass and 290 pounds of smallmouth bass produced and stocked from Harold Parker pond system.

Modification of the water quality project objectives were implemented to classify pond types according to the stage of aging or eutrophication for correlation with fish productivity. In addition, the effect of liming specific lakes with low fertility was combined into the project to determine if it would increase potential fertility.

Ten ponds totaling 358 acres were reclaimed for trout and warmwater fish management. The following districts and ponds were treated: South-eastern District — Hoxie Pond, Peters Pond and Pimlico Pond, Sandwich; Lout Pond, Russell Pond and Moning's Pond, Plymouth; Northeastern District — Walden Pond, White Pond, Concord; Western District — Hallockville Pond, Plainfield Pond, Plainfield.

Stream access and improvement work continued on the Squannacook River. Assistance from local Boy Scouts greatly contributed to project progress on the river.

During 1968-1969 the pesticide laboratory in Westboro, operating in conjunction with Massachusetts Health Research Institute and funded with a grant from the Federal Water Pollution Control Administration, analyzed 379 fish collected from 77 sampling stations throughout the state. Individual analysis of these were conducted to determine the concentrations of DDT, DDE, DDD, Lindane, Heptachlor, A-BHC, Aldrin, Heptachlor Epoxide, Dieldrin and Endrin. Generally, in the samples analyzed, there was an increase in DDT residue from 1967-1968. In addition to the above, samples from about 25 different fish kills, 10 miscellaneous samples and 75 individual fish from Quabbin Reservoir, were analyzed.

During 1968-1969 a total of 1,508,683 fish or 382,713

The Bay State angler may still find remote, quiet waters in wilderness settings to enjoy his sport.

The ultimate objective — what father and son duet, like this one, wouldn't remember such a catch for years to come?

pounds was liberated by our six hatcheries throughout the ponds and streams of the Commonwealth. An additional 114,566 fish or 30,591 pounds were received from the U.S. Fish and Wildlife Service for stocking in Massachusetts.

One of the highlights in hatchery operations was the completion and implementation of the new McLaughlin Hatchery whose construction was initiated in November 1967. Approximately 200,000 pounds of trout are expected to be produced annually increasing our total annual production by 35 percent.

In order to place the new hatchery in current production the bulk of yearling rainbow trout from the Berkshire Hatchery were transferred there. This caused a relatively slight production decrease in weight for the year as compared to last year. Also, the Berkshire Hatchery was released by the state and returned to the U.S. Fish and Wildlife Service.

Trout nutrition experiments are still in progress. Monitoring of state hatcheries to detect disease and apply proper treatment were undertaken where necessary.

TROUT DISTRIBUTION FROM STATE AND FEDERAL HATCHERIES

JULY 1, 1968 TO JUNE 30, 1969

BROOKS		BROWNS		RAINBOWS		Total State Trout
Under 6''	Over 6''	Under 6''	Over 6''	Under 6''	Over 6''	
77,450	519,029	50,000	65,395	284,780	512,029	1,508,683

Total Trout Distribution 6-9''	763,319	
Total Trout Distribution 9'' plus	33,134	
Total Federal Trout Distribution 6'' plus	114,566	
Total Catchables (6'' plus)		1,211,019
Total Fingerlings (6'' minus)		412,230
GRAND TOTAL		1,623,249

STATION POUNDAGE

Station	*Total lbs.*	
Berkshire Hatchery	4,843	
McLaughlin Hatchery	5,831	
Montague Hatchery	74,339	
Palmer Hatchery	46,651	
Sandwich Hatchery	139,580	
Sunderland Hatchery	111,469	
State Poundage		382,713
North Attleboro	17,914	
Nashua, New Hampshire	12,677	
Total Federal Poundage		30,591
GRAND TOTAL		413,304

(This table does not show trout retained for brood stock)

LANDS ACQUIRED

The following list includes major holdings acquired by the division. Many of our more recent purchases were made possible by the one dollar increase in license fees.

* * *

CHESHIRE WILDLIFE MANAGEMENT AREA

468 Acres — Farm-Game Area

Location: Cheshire — Western District

The setting for this area is rolling terrain, typical of New England farmland. The area offers pheasant, rabbit and grouse hunting. Spectacular scenery greets the Sportsman as he traverses this area. Mt. Greylock looms to the west, the Hoosic Valley unfolds to the north, Cheshire Reservoir lies to the south, and the famous Berkshire hills and the Mohawk Trail lies to the east.

This area is steeped in history. A stone tower was erected on this site by the Sons of the American Revolution as a monument to Colonel Joab Stafford, first settler of New Providence (Cheshire) and commander of the "Silver Greys" in the Battle of Bennington.

* * *

LENOX WILDLIFE MANAGEMENT AREA

247 Acres — Farm-Game Area

Location: Lenox — Western District

This property is level farmland bordered on the east by the Housatonic River. Quality hunting for rabits, pheasants, grouse, woodcock and other small game is one of the attributes of this area. The river provides exciting waterfowl jump shooting, typical of inland waterfowling. This area will provide a natural access to the river.

* * *

CONWAY WILDLIFE MANAGEMENT AREA

525 Acres — Farm-Game Area

Location: Conway — Western District

Another typical New England farm with rolling terrain offering varied small game hunting. Poland Brook, a small trout stream flows through the property and has produced surprising results for those fishermen who have "wet a line" in this stream.

Two well maintained town roads allow easy access to and from this area.

* * *

SAVOY WILDLIFE MANAGEMENT AREA

420 Acres — Forestland

Location: Savoy — Western District

A softwood-hardwood forest type cover contributes to the snowshoe hare, grouse and deer hunting to be enjoyed here.

* * *

BECKET WILDLIFE MANAGEMENT AREA

234 Acres — Forestland

Location: Becket — Western District

Deer, snowshoe hare, grouse and grey squirrel are species found on this area. A small pond provides limited fishing and some waterfowl action.

* * *

CHESTER WILDLIFE MANAGEMENT AREA

1,600 Acres — Forestland

Location: Chester-Worthington-Huntington — Western District

Additional acreage to this area totals 633 acres. This area is situated between the Knightville and the Littleville Flood Control lands. Deer, snowshoe hare, woodcock, grouse and cottontail rabbits are found on this area. This area is becoming increasingly popular to buffs of snow-mobiling as woodsroads and trails meander throughout this area. Small beaver impoundments also compliment the area and those who wish to hike of the beaten path for native trout fishing, find these small beaver ponds rewarding.

* * *

STREAM ACCESS*

348 Acres Total

One hundred and seventy-two acres have been acquired on the Little River that parallels Route 112 in the towns of Worthington and Huntington. This picturesque stream, stocked by the Division, provides quality fishing throughout the season.

One hundred and seventy-six acres providing access to the East Branch of the Westfield River also will insure the fishermen of today and the future, a place to fish and call their own.

*Eighty acres were given to the Division on the East Branch of the Westfield River in the town of Cummington by the Council of Sportsmen Clubs of Hampden County, Inc.

* * *

PAXTON WILDLIFE MANAGEMENT AREA

327 Acres — Farm-Game

Location: Paxton — Central District

This farm-game area that is destined to encompass some 500 acres is within a mere 20 minute drive of the metropolitan area of Worcester. For the most-part this area is farmland, interspersed with hedgerows and woodlands. Game species that are found on this area include pheasants, grouse, snowshoe hare, woodcock and cottontail rabbits.

* * *

SWIFT RIVER WILDLIFE MANAGEMENT AREA

697 Acres — Farm-Game

Location: Belchertown — Central District

An area unique because of its desirable location. This area lies south of the largest body of fresh water in southern New England, the Quabbin Reservoir. The Swift River, the finest trout stream in Massachusetts, flows south from the Quabbin through this property.

Located on this area is the Charles L. McLaughlin Trout Hatchery, one of the largest trout rearing facilities in the Northeast.

This area may well develop into one of the most important recreational centers in all Massachusetts.

* * *

WINIMUSSET WILDLIFE MANAGEMENT AREA

510 Acres — Farm-Game

Location: New Braintree — Central District

A perfect blend of farmland, woodland and wetland characterizes this as an ideal wildlife management area. This particular area will provide countless hours of pleasurable hunting to the Sportsmen as well as compatible uses that will be afforded the public. A small stream flows across this property affording limited trout fishing.

This area is rich in history as the area is reputed to have been the campground of the followers of King Phillip, one of the greatest of Indian Chiefs.

* * *

PHILLIPSTON WILDLIFE MANAGEMENT AREA

752 Acres — Forestland

Location: Phillipston-Petersham — Central District

A composition of open and semi-open cover with woodlands. contributes to the theme of variable hunting. This area provides a variety of game species including deer, snowshoe hare, grouse, woodcock, cottontail rabbits and grey squirrels.

FOR EVERYONE

QUABOAG RIVER WILDLIFE MANAGEMENT AREA

793 Acres Forestland

Location: Brookfield - West Brookfield Central District

Here is an area that offers multiple-use recreation. Access to the Quaboag River for fishing and other water oriented recreation. Waterfowl gunning as well as other types of hunting is in the offering on this area. The cover on this area is a mixed hardwood-softwood stand.

* * *

STREAM ACCESS

1,303 Acres

Access to four streams in this district add significantly to guaranteeing the Sportsmen that their right to fish will be protected — one hundred and eighty-nine acres on the Swift River, 753 acres on the Millers River, 80 acres on the Ware River and 281 acres on Lawrence Brook.

Gifts of land to this division within the Central Wildlife District, total 350 acres. These properties are located in — *Templeton,* a gift from Mr. L.C. Day; *Northboro,* donated by the MacFarland family and *Spencer,* donated by the Auburn Sportsmen Club.

Through our mistake the Auburn Sportsmen Club did not receive the appreciation and recognition it so justly deserves. Due to the untiring efforts of the members of the Auburn Sportsmen Club, a prime small management area is provided.

* * *

CRANE WILDLIFE MANAGEMENT AREA

1,615 Acres Farm-Game

Location: Falmouth Southeast District

Fifty-three acres have been added to this area to increase the acreage from 1,562 to slightly over 1,600. This area of open fields, interspersed with scrub-oak and pine, harbors pheasants, quail, cottontail rabbits and deer.

In addition to hunting, this area provides other uses such as dog training, wildlife photography, nature study, hiking and field trails.

* * *

WEST MEADOWS WILDLIFE MANAGEMENT AREA

222 Acres Farm-Game

Location: West Bridgewater Southeast District

Four additional acres enlarge this area comprised of a swamp and old abandoned fields. Species of game to be found on this area are waterfowl, cottontail rabbits, grey squirrels, grouse, deer and pheasants.

* * *

ROCKY GUTTER WILDLIFE MANAGEMENT AREA

1,541 Acres Forestland

Location: Middleboro Southeast District

This area is one of the largest single purchases ever undertaken by this division. The terrain of this property is slightly rolling. Small marshlands compliment the area providing waterfowl and aquatic mammal habitat.

A forest cover comprised of pine interspersed with varities of hardwoods is found throughout the area. Quail, grouse, snowshoe hare, woodcock, cottontail rabbits, waterfowl, raccoon and deer are species of game found on this large tract of land.

Wood paths and trails allow easy access along with well-maintained town roads. The recreational potential of this area is immeasurable.

* * *

ACCESS AND LAUNCHING SITE

134 Acres

Location: Sandy Pond, Plymouth

An access and launching site has been acquired on this pond. A parking area will accommodate 20-25 vehicles.

This pond is a trout pond having been reclaimed in 1967.

ADDITIONAL HATCHERY LANDS

Seventy acres of land were acquired in the town of Rochester for a warm-water fish hatchery.

* * *

CRANE POND WILDLIFE MANAGEMENT AREA

1,569 Acres Farm-Game

Location: Groveland-Georgetown-West Newbury Northeast District

Acquisitions totaling 250 acres have been added to this well known farm-game area. This area is comprised of semi-open fields, woodland borders and woodlots.

* * *

MILL CREEK WILDLIFE MANAGEMENT AREA

529 Acres Farm-Game

Location: Newbury - Rowley Northeast District

Additional acreage to this area has been acquired. Mill Creek is well known for its waterfowl and shore bird habitat. The area is bounded on the north by the Parker River, the Mill River bounds the west, bounded on the east by the Boston and Maine R.R., and enclosed by a small stream on the south.

* * *

NORTHEAST WILDLIFE MANAGEMENT AREA

1,317 Acres Farm-Game

Location: Newbury Northeast District

Two hundred and thirty-two acres of prime land have been added to this section also known as the Downfall Area. Accepted and proven wildlife management techniques is transforming it into one of the leading farm-game areas in the Northeast District. Utilization of this area has been steadily on the rise.

Open, brushy fields, interspersed with woodlots provide food and cover for the pheasants, grouse, woodcock, rabbits, squirrels and raccoon.

* * *

STREAM ACCESS

Four hundred and eighty acres (250 acres of this figure donated by Middlesex County League), have been acquired on the Squannacook River. This fine trout stream rises in New Hampshire and flows southeast into Massachusetts to later become part of the Nashua River. Acquisitions on this river were made in the towns of Groton, Townsend and Shirley.

This stream not only furnishes exceptional trout throughout the season, but is enjoyed by canoe enthusiasts who seek the tranquility of the surrounding countryside. Many forms of wildlife can be encountered as you glide noiselessly down this river.

Any land acquisitions on this river are complemented by the more than 7,000 acres of Squannacook watershed land owned by Natural Resources Division of Forest and Parks.

Small marshlands in Essex, Rowley, and Ipswich have been purchased.

* * *

ACCESS AND LAUNCHING SITE

209 Acres

Location: Mascopic Lake Dracut - Tyngsboro

An access and launching site has been established on this lake. Yellow perch, white perch, largemouth bass, smallmouth bass, and pickerel are some of the species that await the angler's lure.

* * *

Acknowledgement and appreciation are in order for the following gifts of land.

Marblehead Fish and Game
Lester B. Woodbury
Middlesex County League

WILDLIFE MANAGEMENT

GAME FARMS

Results of genetic research on sex-linkage of ring-neck pheasants have given the Massachusetts sportsmen excellent dividends. Now our game culturists are able to sex day-old pheasant chicks with 100% accuracy. In the past, sexing of day-old pheasant chicks using the eye-field technique resulted in errors as high as 25%. Thus, with this new sexing method, an increase in the number of cock birds can be reared, but most important is the savings in terms of pen space, feed, labor, etc.

All other activities at the farms were of routine nature.

DOVE BANDING PROJECT

The objective of this banding project of mourning doves is to increase available data on this species within the state as well as the Eastern Dove Management Unit. By banding mourning doves in Massachusetts, increase knowledge of population dynamics, habitat needs and techniques for species management will be obtained. Working in cooperation with the Massachusetts Audubon Society, a total of 2,101 doves were live-trapped and banded at eleven sites in Massachusetts. Preliminary returns from last year's banded birds reveal that Massachusetts-reared birds were shot in Maryland, Virginia, North Carolina, and South Carolina.

FOREST PHEASANT PROJECT

The work on this project has progressed ahead of the schedule originally outlined. We have a larger population than we anticipitated we would have at this time, as a result of very good fertility and hatchability (about 90% and 80% respectively).

Selection pressure was placed on this year's stock for egg production, hours of incubation required for hatching and both egg and adult color. Some of the 1000 chicks produced this spring will be placed on an island and two other isolated submarginal land areas.

Next year's (1970) plans call for continued selection for egg production, hours of incubation and color of both the birds and their eggs. Additional effort will be placed on selection for body weight, wildness, date of hatch, spur length, shank length and rapid feathering. Birds will be placed on the same areas used in 1969 for field testing.

Deer Project

Massachusetts deer hunters harvested 1,427 deer during the 1968 deer season. This was the second antlered deer only season in the history of Bay State deer hunting. Antlerless deer harvest was by permit only.

Thirty deer checking stations were manned by Division personnel to record the compulsory deer kill reports.

The reported deer kill for the 1968 deer season is as follows:

	Archery	*Shotgun*	*Total*
Males	21	1,083	1,104
Females	13	310	323
Total	34	1,393	1,427

Included in the above deer harvest totals are 421 deer reported by holders of antlerless deer permits.

Deer mortalities caused by other than hunting were reported as follows:

Cause	*Number*	*Percent*
Motor Vehicles	456	70
Dogs	74	11
Illegal	29	4
Crop damage	7	1
Other and Unknown	84	13

Turkey Stocking Project

An experimental release of wild turkeys was made in Massachusetts during 1960 and 1961. Twenty-two wild turkeys from three different sources were released in Quabbin Reservation during 1960 and 1961. Spring populations remained relatively static through 1965 due primarily to high winter mortality and low juvenile recruitment during same years. Population increases have occurred since 1965, representing a reversal of the trend of a steadily decreasing population to 1964. Mild winter conditions and an artificial winter feeding program were probably responsible for the increased overwinter survival of wild turkeys during the 1965-1966 and 1966-1967 winters. The wild turkey was considered established in the Quabbin area in 1967. The emphasis in the program was then shifted from intensive research on the Quabbin population to a statewide population survey and restoration effort. The 1968 breeding population was estimated to be 50 turkeys in the Quabbin area. Sixteen broods were raised and 83 poults survived to September. The 1969 late winter/early spring population was estimated to be 60 turkeys.

The main flocks at each of the major release sites were censused by direct search from snowmobiles and by counting tracks in snow during late winter. These late winter-early spring populations were estimated to be: Myles Standish, 10; Mt. Washington, 12; October Mt., 31; Barre, 20; Douglas, 11.

A release of 12 turkeys was made in a new area in the town of Douglas during September, 1969.

Waterfowl Project

Wood duck nesting studies at Great Meadows National Wildlife Refuge indicated the poorest production of young in eighteen years. Population levels of nesting wood ducks on eight study areas in central Massachusetts remained the same as 1967 levels, but recruitment of young females to the breeding population was poor.

Canada goose nesting studies continued on the Framingham-Sudbury Reservoir system. The nesting population appears to number about thirty breeding pairs with many non-breeding birds present on this reservoir. Goose nesting occurs in many other areas in the Suasco watershed.

Gosling transplants continued. Releases were made in western Worcester County, Franklin County, and Berkshire County. Four tagged adult geese released at the Fernald State School in Templeton as goslings in 1967 were observed on the school grounds this year. Hunting recoveries of released goslings have been reported from New Jersey, Connecticut, Rhode Island, and Massachusetts. One goose was live-trapped at Bombay Hook National Wildlife Refuge in Delaware.

Banding operations resulted in a total of 1,558 ducks being banded on the coast in January and February. Of these approximately 1,300 were black ducks, the remainder were mallards and black-mallard hybrids. Nighlighting by airboat produced a total of 650 birds banded prior to the 1968 hunting season. Species banded included black duck, mallard, wood duck, blue-winged teal, green-winged teal, pintail and black-mallard hybrid.

The winter inventory count of waterfowl totalled 120,500 birds. This was approximately 30,000 birds below the 1968 count, and could be attributed to a corresponding drop in the number of eiders observed during the inventory flights. The count this year was equal to the average count of the past ten years.

Survey flights the day prior to the opening of the 1968 Special Scaup Season revealed the presence of 14,000 scaup on our coastal waters. Flights during the special season revealed no significant hunter participation.

Development Work

Again much of the four wildlife districts' time was spent on development and maintenance of this division's wildlife management areas. Over 90 miles of roads were maintained by graveling, brush cutting, etc. A total of 12,312 trees and shrubs were planted along edges and through fields to provide travel lanes and food. In addition, over 400 acres of spring and fall plantings were made or maintained for wildlife food and cover on eleven wildlife management areas.

Other important activities were thinning and clearing on ten wildlife management areas to provide additional food and cover by cutting the overstory and encouraging the understory; maintenance and construction of wood duck nesting boxes, and related work.

GAME DISTRIBUTION

July 1, 1968 — June 30, 1969

Pheasants		*Hens*	*Cocks*	*Total*
Adults:	Spring and Summer liberations	3,150	285	3,435
Young:	August liberations (12 weeks)	3,503	11,454	14,957
	October-November liberations (17-25 weeks)	250	41,100	41,350
	Sportsmen's Club Rearing Program	50	4,998	5 048
Totals		6,953	57,837	64,790
Quail				
Adults				200
Young				3,252
Totals				3,452
White Hare				
Northern Varying, purchased				2,500

MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

The following projects have been worked on by members of the Cooperative Unit in the past year:

Beaver Project

Dr. Larson has developed a valid technique of determining the sex of beaver of any age in the wild by the examination of blood smears.

Woodcock Project

Dr. Sheldon found that there was no drop in the singing male woodcock population on the old census routes.

Twenty random routes were established in the state this year, and two of these were run by Unit personnel.

The Unit leader and Head Game Biologist from the division attended a Wildlife Conservation symposium at the University of Maine in late June.

Ecology and Physiology of Avian Sterility

Drs. David K. Wetherbee and Bernard Wentworth conducted further intensive studies developing chemo-sterilants for bird control.

Dr. Wetherbee prepared a manuscript on the ecology, land history and natural history of Muskeget Island. This has been submitted for possible publication as a book.

Sparrow Hawk Project

Mr. Charles Keene was making an extremely interesting study of the role of tradition in nest site selection of the sparrow hawk. He has erected two hundred nest boxes and has had over fifty pairs under observation. Close to one hundred sparrow hawks have been banded.

Black Duck Project

Mr. John Grandy spent the winter in Cape Cod where he initiated a study on the feeding habits and behavior of wintering black ducks. He completed vegetation transects and collected some duck-gizzards. This study will be continued for the next two years.

Impoundment Project

Mr. Harry Heusmann completed a study of the wildlife and recreational value of borrow-pits and other wetlands caused by highway construction.

Waterfowl Investigation on the Connecticut River

Mr. William Rockwell is completing the study of the waterfowl population and hunters using that part of the Connecticut River flowing through Massachusetts.

In conjunction with this study he has evaluated the history and current acreage of all wetlands in the Valley.

Ruffed Grouse Studies

Dr. Brander continued telemetry studies of Ruffed Grouse determining the food utilized and the occupied cover during the winter.

Canada Goose Project

Mr. James Cooper has been working since March at the East Meadows Ranch near Delta, Manitoba where he has initiated an intensive study of nesting canada geese.

This project is a cooperative undertaking financed by the Unit and the North American Wildlife Foundation.

Cooper will continue this study for two more nesting seasons.

LANDS AND WATERS ACQUISITION

THE problems encountered almost daily in the administering of an acquisition program encompassing the whole state are of little or no interest to the average sportsman. His only interest is in the end result and he makes his judgement on the success of the program on this basis. Yet these problems and details are important and require much time, thought and effort. We have yet to make a purchase of land which was easy.

There is always a problem cropping up unexpectedly which must be worked out and solved before progress to a successful conclusion can be made. The legal department of state government is a stern taskmaster and the administrative branch unyielding on procedure. This is as it should be for the protection of the state, and also for the protection of the party conveying to the state.

Notwithstanding the problems involved, however, progress has been made in our long range acquisition program to provide an adequate supply, in every section of the state, of lands on which to hunt and waters on which to fish.

Three new wildlife management areas were established during the year, one in Conway, one in Lenox and one in Savoy. The Conway Wildlife Management Area contains 525 acres with more in the process. It is a farm game area consisting of around two hundred acres of cleared land used for pasture and mowing and the rest in woodland in various stages of development. It is a rolling topography with Poland Brook flowing through and providing a source of water in the pasture areas. This area has excellent potential for development as a farm game area and we are hopeful of adding more acreage.

The area in Lenox known as the Housatonic Wildlife Management area at present contains approximately 250 acres and is part of a much larger area owned by other public agencies.

ıe area is almost flat land sloping gently from west to at the river bank with wet swampy land along the ıdering course of the Housatonic River. A good poris open hay and pasture land. More acreage will be d in the near future.

The Savoy Wildlife Area consists of over 400 acres, is all wooded and has good potential for future development and management.

Other Wildlife Management areas to which more acreage was added are as follows:

Crane Area — Falmouth	54 acres
Northeast Area	117 acres
Chester Area	420 acres
Squannacook River Area	65 acres
New Braintree	38 acres
Marshes along North Shore	38 acres

Total acreage actually acquired during the fiscal year was 2,514 acres.

Options were obtained on approximately 1,700 acres in the Rocky Gutter section of Middleboro and they are being processed at the present time. The Bureau of Outdoor Recreation has approved this acquisition and reimbursement of one half the total cost is anticipated from this agency. This will be the first time that this division will receive funds from this Agency.

The Hampden County Council of Sportsmen's Clubs were very generous in giving to the division approximately 80 acres of land along the East Branch of Westfield River. We are most grateful to them and their hard working land committee. If only other clubs and Leagues would follow suit. All gifts of land, frontage, access points, etc. are most welcome and useful for Division purposes. River access and roadside parking facilities were acquired on the Quaboag River in Warren, on the Squannacook River in Townsend and on the East Branch of the Ware River in Paxton. There is a great need for acquiring more access and parking areas to streams and the Division will make a special effort and concentrate on this phase of acquisition.

As in the past, several parcels of land which were offered for sale were investigated and in some cases negotiations were started but never materialized. Cooperation from the other sections of the division has been excellent and we have also received much help from other state and federal agencies for which we are most grateful.

INFORMATION AND EDUCATION

THE education of adults of today and tomorrow in the wise use of out natural resources and the information of the general public in the ways and means of their fish and game division continues to be the goal of the information and education section.

Of particular interest to those who provide its revenue, the license buying hunters, fishermen and trappers of Massachusetts, and non-resident license buyers as well, the Division regularly furnishes complete and detailed reports of its activities through its information program. A detailed and complete listing of the Division's receipts and expenditures is also publicly available to any person interested enough to get on the free mailing list and/or ask for specific information on any program conducted by the Division.

Many members of the agency attended countless meetings or various organizations during the fiscal year to discuss Division programs and policies.

Frequent news releases attempt to keep the public well-informed through the media of newspapers, radio, television and magazines. Pertinent new releases are issued not only by the information-education section, but also by the wildlife district personnel as well, for specific programs within their geographic scope of operations.

Circulation of the Division's official magazine, MASSACHUSETTS WILDLIFE, continued throughout the year, with circulation at a figure of 41,000 at year's end. Earlier plans to expand the magazine and change to a fee system were stalled by lack of the necessary legislation.

The Division's free loan film library reached an all-time low in distribution of films for viewing by various organizations and groups. Budgetary requests for monies to both maintain present film stocks and to acquire needed new films and equipment continue to be severely chopped out each year. Wear and tear of existing films has taken a heavy toll, with several films having to be retired from the active list.

Several sportsmen's shows and fairs throughout the state featured exhibits put on by the Division, through the efforts of district personnel and the information-education section. Highlights of the year's exhibits was the display of live fish, trout and several warm-water species, at the annual New England Sportsmen's Show held at the War Memorial Auditorium of the Prudential Center in Boston.

The Division continued to serve the youth of the Commonwealth through its efforts in conducting the annual Junior Conservation Camp, held at the Worcester County 4-H Center at Thompson's Pond in Spencer.

During the fiscal year, thousands of letters, requests for literature and information, posters, pond maps and other Division printing were handled.

Financial Report, July 1, 1968 To June 30, 1969

HOW THE SPORTSMEN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	3304-01	$118,268.33		
Board of Fisheries and Game	3304-01	750.00	$119,018.33	4%
Information-Education	3304-01	—	78,944.99	3%
FISHERIES PROGRAMS				
Fish Hatcheries	3304-42	—	348,953.79	11%
Fisheries Management	3304-42	148,389.63		
***Fish Restoration Projects	3304-47	43,635.65		
Fisheries Management	3304-51	100,027.85		
*Fisheries Research Coop. Unit	3304-55	10,000.00		
**Conn. River Shad Study	3304-62	14,176.09	316,229.22	10%
WILDLIFE PROGRAMS				
Game Farms	3304-51	—	265,165.25	8%
Wildlife Management	3304-51	100,027.86		
*Damage by Wild Deer & Moose	3304-41	14,444.55		
Wildlife Research Coop. Unit	3304-44	7,966.58		
***Wildlife Research Restoration	3304-53	172,431.65		
****Eastern Dove Management	3304-64	3,500.00	298,370.64	9%
CONSTRUCTION				
*Trout Hatchery, East Sandwich	3304-43	9,496.20		
Charles L. McLaughlin	3304-63	349,166.87		
*Trout Hatchery	7801-01	888,289.15	1,246,952.22	40%
LAND ACQUISITION*	7801-02		270,445.28	9%
LAW ENFORCEMENT				
Public Hunting Grounds	1020-0200	11,070.00		
Conservation Officers Salaries and Expenses	1020-0000	185,536.00		
Other - Office of the Commissioner	1000-0000	2,522.00	199,128.00	6%
GRAND TOTAL:			$3,143,207.72	100%
Surplus in Inland Fisheries & Game Fund as of June 30, 1969			$816,988.85	

*Continuing Appropriations
**50% Reimbursable by Federal Funds
***75% Reimbursable by Federal Funds
****100% Reimbursable by Federal Funds

APPROPRIATIONS & EXPENDITURES

Account No. & Title		Appropriation	Expenditures & Liabilities	Reverted
3304-01	Administration	$ 203,760.00	$ 197,963.32	$ 5,796.68
3304-42	Fisheries Management	513,233.00	497,343.42	15,889.58
***3304-47	Fish Restoration Projects	49,585.00	43,635.65	5,949.35
3304-51	Wildlife Management	485,250.00	465,220.96	20,029.04
***3304-53	Wildlife Restoration	181,405.00	172,431.65	8,973.35
**3304-62	Connecticut River Shad Study	14,300.00	14,176.09	123.91
3304-63	Construction, Quabbin (Additional Funds)	349,166.87	349,166.87	0.—
****3304-64	Eastern Dove Management	3,500.00	3,500.00	0.—
		$1,800,199.87	$1,743,437.96	$ 56,761.91

		Continuing Appropriations	Expenditures	Balance Forward
3304-41	Damage by Wild Deer and Moose	17,875.43	14,444.55	3,430.88
3304-43	Cert. Construction & Improvements Trout Hatchery, East Sandwich	56,659.48	9,496.20	47,163.28
3304-60	Acquisition Land & Waters for Fish & Wildlife Management Purposes	50,000.00		50,000.00
7801-01	Construction Quabbin Fish Hatchery	888,327.61	888,289.15	38.46
7801-02	Land & Waters for Fish & Wildlife Management Purposes	378,749.78	270,445.28	108,304.50
7802-01	Land & Water Acquisition and Development	1,000,000.00	—	1,000,000.00
		$2,391,612.30	$1,182,675.18	$1,208,937.12

**50% Reimbursed Federal Funds
***75% Reimbursed Federal Funds
****100% Reimbursed Federal Funds

SUMMARY OF FISH AND GAME INCOME

Fishing, Hunting and Trapping Licenses	1,548,809.50*
Special Licenses, Trap Registrations, Tags and Alien Gun Permits	7,081.25**
Rents	3,505.50
Misc. Sales	9,622.98
Mass. Mourning Dove Reimbursement	3,500.00
Pittman-Robertson Federal Aid	81,909.66
Dingell-Johnson Federal Aid	60,515.61
Anadromous Fish Projects Federal Aid	6,307.69
B. O. R. Reimbursement	30,000.00
Court Fines	9,809.00
Archery Stamps	4,140.70
Refunds, Prior Year	693.45
	$1,765,895.34

*See Detail Sheet No. 1
**See Detail Sheet No. 2

ANALYSIS OF SPECIAL LICENSES

TYPE OF LICENSE	NUMBER ISSUED	RECEIPTS
TRAP REGISTRATIONS:		
Initial	94	$ 94.00
Renewal	333	327.75
FUR BUYERS:		
Resident	21	210.00
Non-Resident	3	300.00
TAXIDERMIST:	72	360.00
PROPAGATORS:		
(Special Fish)		
Initial	18	90.00
Renewal	187	540.00
(Fish)		
Initial	5	25.00
Renewal	83	249.00
(Birds & Mammals)		
Initial	82	410.00
Renewal	369	1,104.50
(Dealers)		
Initial	5	25.00
Renewal	85	255.00
Additional	404	404.00
(Ind. Bird or Mammal)		
Initial	35	34.50
Renewal	71	35.50
SHINERS FOR BAIT:	175	875.00
FIELD TRIAL LICENSES:	4	40.00
QUAIL FOR TRAINING DOGS:		
Initial	25	125.00
Renewal	49	147.00
COMMERCIAL SHOOTING PRESERVES:	10	500.00
" " Tags	2,250	
" " Posters	800	
Game Tags	3,940	
Fish Tags	23,250	582.00
TRAPPING CERTAIN BIRDS:	1	5.00
MOUNTING PERMITS:	43	43.00
SPECIAL FIELD TRIAL PERMITS:	30	300.00
		$7,081.25

RULES AND REGULATIONS

RULES AND REGULATIONS PROMULGATED BY THE DIRECTOR OF FISHERIES AND GAME DURING FISCAL YEAR ENDED JUNE 30, 1969:

April 11, 1969 Rules and regulations relating to the hunting of Pheasants, Quail and Ruffed Grouse in Massachusetts (pertaining to Youth Upland Game Training).

May 29, 1969 Rules and regulations relating to the hunting and trapping of mammals in Massachusetts.

In accordance with the authority vested in me by Section 5, Chapter 131, of the General Laws, as most recently amended by Chapter 802, Acts of 1967, and subject to the regulations hereinafter prescribed, I hereby declare an annual open season for the hunting and trapping of mammals as follows:

A. Black bear may be hunted from October 20 to the following December 31.

B. Mink, otter, and muskrat may be taken by trapping only from November 1 to the following March 1.

C. Opossum and raccoons may be hunted, except as provided in Section 70 of Chapter 131 of the General Laws and except as provided by Rules and Regulations relative to the hunting of deer in Massachusetts promulgated by the Director of Fisheries and Game, with or without the use of dogs from September 20 to the following December 31.

D. Opossum and raccoons may be trapped from November 1 to the following March 1.

E. All mammals not herein mentioned except other mammals specifically protected by other laws or rules and regulations in Chapter 131 may be trapped from November 1 to the following March 1 and subject to existing laws may be hunted from January 1 to December 31.

F. Beaver may be trapped from December 15 through March 1 throughout the Commonwealth except on state forest sanctuaries, provided the pelts of all beaver lawfully trapped shall not be sold or otherwise disposed of until they are first brought to a designated representative of the Division of Fisheries and Game and tagged with a metal tag by said representative. All pelts must be tagged within two days after the closing day of the open season.

1. In the foregoing provisions for open seasons, opening and closing dates are inclusive.
2. During the period from sunset of one day to sunset of the following day, a person shall not hunt or take by hunting more than three raccoons, nor shall two or more persons hunting in one party kill or take more than six raccoons.
3. In the foregoing provisions the word "hunt" in all its moods and tenses shall be construed so as to exclude the use of traps.
4. A person shall not remove or attempt to remove a raccoon from any hole in the ground, stonewall, from within any ledge, or from under any stone, or from any hole in any log or tree.
5. A person shall not kill or take more than one black bear.
6. Except as otherwise provided in Chapter 131 of the General Laws, as amended, it shall be unlawful for any person:
   a. To have in his possession the green pelt of any fur-bearing mammal or any part of such pelt except during the open season for such mammal and for ten days thereafter.
   b. To possess or have under his control a trap on the land of another where fur-bearing mammals might be found between April 16 of any year and six o'clock ante meridian on the following November first, both dates inclusive.
   c. At any time to possess or have under control an unregistered trap on the land of another where fur-bearing mammals might be found.
   d. To possess or have under his control unless duly authorized as provided in clause "m" the registered trap of another.
   e. To trap on the enclosed land of another or on land posted as provided in section one hundred, without the written consent of the owner or occupant of such land.
   f. To trap in a public way, car road, or path commonly used as a passageway for human beings or domestic animals.
   g. To trap within ten feet of the waterline of a muskrat or beaver house.
   h. To tear open, disturb, or destroy a muskrat house, beaver house, or beaver dam.
   i. To trap with a steel or jaw trap, or a dead fall trap with a spread of more than six inches, or a "stop-thief" trap, or a dead fall trap with an opening of more than six inches, or a choke trap, or a trap with teeth on one or both jaws, or a trap of the "conibear" type unless such trap is completely submerged in water, or a trap with two sets of jaws either set of which has a spread of more than six inches, or a combination of one set of jaws of one size and another set of jaws of another size, one jaw of which is stationary and one free moving, or one or all jaws free moving with a spread of more than six inches, or a trap capable of taking more than one mammal at a time, except that beaver only may be taken by traps having a jaw spread of not less than five inches or more than seven and one-half inches or by a "conibear" type trap of any size if such trap is completely submerged in water. Nothing in this clause shall be deemed to prohibit the use of a stop-loss trap, so-called, having one movable arm attached, the purpose of which being to prevent an animal caught therein from gnawing his foot or leg. For the purpose of this clause, in determining the jaw spread of a trap, it shall be measured midway across the open jaws at right angles to the hinges from the extreme outside edges.
   j. To trap before six o'clock ante meridian on the opening day of any trapping season.
   k. To fail to visit at least once in each calendar day between the hours of four o'clock ante meridian and ten o'clock post meridian, all traps by him staked out, set, used, tended, laced, or maintained except that under the ice sets for beaver shall be visited at least once in each forty-eight hour period.
   l. To destroy, mutilate, or spring the trap of another.
   m. To take any fur-bearing mammal or predator from the trap of another unless he has upon his person a specific written authorization to do so, signed by the owner of such trap. The owner of traps may give such authorization to any person licensed to trap under this chapter for a period not to exceed one week from the day he himself last tended his traps provided that notice of the giving of such authorization including the name and trapping license number of the person so authorized shall be given to the district natural resource officer and to the director within twenty-four hours after the same has been given.
   n. To set, use, place, locate, tend, or maintain a trap not bearing the name of the person or persons using the same in such a manner that it shall be legible at all times.
   o. Any trap set in violation of law shall be forfeited to the Commonwealth by any officer empowered to enforce this chapter and shall be disposed of by the director in the best interests of the Commonwealth.
7. If any part, section, or sub-division of these rules and regulations or the application thereof shall be held invalid, unconstitutional, or inoperative as to any particular person, persons, or conditions, the remainder hereof of the application of any such part, section, or subdivision to other persons and conditions shall not be affected thereby.
8. Rules and regulations relating to the hunting and trapping of mammals which were promulgated on April 8, 1968 are hereby revoked and superseded by the foregoing.
9. These rules and regulations shall become effective on July 1, 1969 and shall remain in effect until amended or revoked.

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1969:

Chapter 652 — An act exempting paraplegics from payment of a fee for a hunting license.

Chapter 157 — An act further regulating the wearing of hunting clothes during the open deer season — deer hunters are now required to wear a minimum of 400 square inches of hunter orange material.

Chapter 757 — An act authorizing the Division of Fisheries and Game to exchange certain land in Barnstable County for other land of equal value — lands in question are these transferred to the Division of Fisheries and Game but requires eminent domain authorization to clear title of the land.

Chapter 566 — An act designating the Director of Fisheries and Game as a member of the Water Resource Commission and providing for the appointment by the Governor of an additional member of said commission.

Chapter 17 — An act reducing the fee for the issuence of a nonresident and alien Fur Buyer's license from $100.00 to $20.00 per year.

Chapter 542 — An act authorizing the Division of Fisheries and Game to acquire land and construct a fishing pier at Cook Pond in the city of Fall River.

Chapter 566 — An act authorizing the Director of Fisheries and Game to undertake a program of management to provide sport fishing at Cook Pond in the city of Fall River.

Chapter 11 — Resolve providing for an investigation and study by the Division of Fisheries and Game relative to constructing fish ladders on the obstructions in the Little River and Westfield River.

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS THROUGH JUNE 30, 1969

Species	*Weight*	*Length*	*Girth*	*Place Caught*	*How Caught*	*Date*	*Caught by*
Largemouth Bass	12 lbs. 1 oz.	25¾″	21¾″	Palmer River, Rehoboth	bait casting	5-9-63	George Pastick, Fall River
Smallmouth Bass	6 lbs. 12 oz.	21″		Pleasant Lake, Harwich	spinning	5-14-67	Thomas Paradise, Arlington
Northern Pike	24 lbs. 8 oz.	45½″	22″	Onota Lake, Pittsfield	live bait	1-13-67	Kris Ginthwain, Pittsfield
Pickerel	9 lbs. 5 oz.	29½″		Pontoosuc Lk., Lanesboro		- -54	Mrs. James Martin, Stockbridge
Rainbow Trout	8 lbs. 4 oz.	26″	16″	Deep Pond, Falmouth	live bait	10-15-66	Roger Walker, Eastondale
Brown Trout	19 lbs. 10 oz.	31½″	22⅝″	Wachusett Res., Boylston	spinning	5-19-66	Dana DeBlois, Sterling
Lake Trout	13 lbs. 1 oz.	31″		Quabbin Res., Pelham	trolling	9-13-63	LeeRoy DeHoff, Suffield, Conn.
Shad	7 lbs. 10 oz.	25½″	19½″	Indian Head	spinning	5- -68	William Spaulding, Whitman
Channel Catfish	13 lbs. 8 oz.	30″	19″	Conn. Riv., Turners Falls	live bait	7-18-64	Robert Thibodo, Northampton
Walleye	9 lbs., 3 oz.			Assawompsett Pond, Lakeville	bait casting		William Spaulding, Whitman
Bluegill	1 lb.	11¼″	9½″	Bog Pond, Norton	spinning	10-17-65	Robert Barrett, Stoughton
Bullhead	5 lbs. 9 oz.	22½″	11½″	Conn. Riv., Hadley	live bait	6-8-63	Mrs. Erna Storie, Chicopee Falls
	5 lbs. 8 oz.	22½″	14″	Leverett Pd., Leverett	live bait	8-2-65	Stephen Brozo, No. Amherst
	4 lbs. 9 oz.	22½″	11½″	Conn. Riv., Chicopee	live bait	9-8-65	Joseph Kida, Chicopee
Calico	2 lbs. 9½ oz.	18″	14″	Merrimack, Lowell	spinning	6-8-65	George Olsson, Lowell
White Perch	2 lbs. 4 oz.	16¾″	11¾″	Halfway Pd., Plymouth	spinning	6-9-65	Richard Rock, Kingston
	2 lbs.	16¾″	11¼″	Halfway Pd., Plymouth	spinning	6-18-66	Richard Rock, Kingston
Yellow Perch		17¼″				5-10-69	Mathew Sergio, Brockton
Brook Trout	6 lbs. 4 oz.	24″	14″	Otis Reservoir, Otis	spinning	6-24-68	Thomas Laptew, Granville

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Licenses			*Price*	*Number*	*Gross Amount*	*Fees Retained by Town Clerk Or City*	*Net Returned To State*
Series	1	Res. Cit. Fishing	(5.25)	120,302	631,585.50	29,837.50	601,748.00
"	2	Res. Cit. Hunting	(5.25)	58,969	309,587.25	14,640.75	294,946.50
"	3	Res. Cit. Sporting	(8.25)	53,610	442,282.50	13,276.00	429,006.50
"	4	Res. Cit. Minor Fishing	(3.25)	17,758	57,713.50	4,420.00	53,293.50
"	4-A	Res. Cit. Female Fishing	(4.25)	22,092	93,891.00	5,481.50	88,409.50
"	5	Res. Cit. Minor Trapping	(3.25)	194	630.50	48.25	582.25
"	6	Res. Cit. Trapping	(8.75)	498	4,357.50	122.25	4,235.25
"	7	Non-Res. 7 day Fishing	(5.25)	2,269	11,912.25	563.00	11,349.25
"	9	Non-Res. Fishing	(9.75)	2,949	28,752.75	724.25	28,028.50
"	9-A	Alien Fishing	(9.75)	773	7,536.75	191.75	7,345.00
"	10	Non-Res. or Alien Hunting	(16.25	1,623	26,373.75	327.00	26,046.75
"	12	Duplicate Licenses	(.50)	3,021	1,510.50	—	1,510.50
"	15	Res. Cit. Sporting	(Free)	19,115	—	—	—
"	17	Res. Cit. (Old Age Asst.) Paraplegic and the Blind	(Free)	2,248	--	—	—
"	18	Military or Naval	(Free)	2,309	—	—	—
				307,730	$1,616,133.75	$69,632.25	$1,546,501.50
					Check Returned Insufficient Funds (Re-deposited)		2,308.00
							$1,548,809.50

Division of
FISHERIES and GAME
Field Headquarters
WESTBORO, MASS. 01581

Second Class
POSTAGE PAID
at Worcester, Mass.

MASSACHUSETTS DIVISION OF FISHERIES AND GAME

REAL PROGRESS WITH TECHNOLOGY

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ANNUAL REPORT 1970

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JAMES M. SHEPARD
Director

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COMMONWEALTH OF MASSACHUSETT

Division of Fisheries and Game

105th Annual Report

His Excellency, Francis W. Sargent, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and Fifth Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1969 to June 30, 1970.

I commend to your attention the very real diversity of public service to all citizens of the Commonwealth demonstrated by this report and respectfully urge your consideration of the vital necessity for financial augmentation to meet increased demands for services and resulting benefits provided by these programs.

Respectfully submitted,
James M. Shepard, Director

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THE COVER: Harassed by over-hunting and land clearing, the wild turkey was one of the first game species to disappear from Massachusetts. But today, with a closed season and cleared land reverting to its natural state, conditions favor a comeback. In 1966, the Division took over a restoration program from the University of Massachusetts' Cooperative Wildlife Unit. Careful research and continued stocking have boosted the state's wild turkey population from 0 in 1959 to about 175 in the spring of 1970. (Photo courtesy of **Berkshire Eagle**).

Publication of This Document Approved By Alfred C. Holland, State Purchasing Agent

2M-6-71-049581

Estimated Cost per Copy $.823

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THE BOARD REPORTS

THE quality of outdoor recreation dependent on our wildlife resources is the primary responsibility of this agency. In the past, wildlife management was a relatively simple and direct process, but as our population explodes, the ecology of this state faces a hailstorm of new threats. So at every turn we must gear our operation to the particular crises at hand.

WETLANDS

The major threat to wildlife is the increasing destruction of habitat. Today, inland and coastal wetlands are perhaps the most valuable land areas we have. They are vital to the wildlife of this state, providing countless species with food, shelter and nursery area. Without wetlands trout streams would dry up, public water supplies would drop past the danger mark, then fill with poisonous salts, and algae blooms. Lakes and ponds would be inaccessable, girdled with wide bands of cracked mud, and flash floods would destroy millions of dollars worth of property. Finally, wetlands themselves offer much in the way of outdoor recreation, providing the public with untold opportunities for nature study, fishing, hunting, boating, etc.

No one in Massachusetts can afford to lose another wetland area regardless of alluring short-term profit. Yet, we continue to lose about 3,550 acres of coastal and inland wetlands annually. Present regulations are stop gap measures and need to be braced up quickly if we expect to save the wetlands we have left.

Harry C. Darling, Chairman of the Fish and Game Board receives Wildlife Conservationist of the Year Award from Chester Spencer, President of the Massachusetts Wildlife Federation.

Members of the Board pictured above are: top row, left to right — Harry C. Darling, Chairman; Bradlee E. Gage, Secretary; bottom row, left to right — Martin H. Burns, Kenneth F. Burns, and Henry J. Colombo.

This past year, citizens of Massachusetts had the opportunity to strike a blow for the environment by pushing for the one piece of legislation that could preserve our wetlands forever. Senate Bill 643 would have allowed the Division of Fisheries and Game to acquire valuable wetlands using eminent domain proceedings if necessary. This legislation seemed to be the answer that every conservationist was seeking. Yet, despite all the environmental fervor that has been sarcastically referred to as the "environmental kick," few rose to the occasion and the bill died.

The number of the bill has now been changed to S780 and portions of it have been amended. It must pass if we are to preserve the quality outdoor recreation Massachusetts citizens enjoy today.

Every dollar collected from the 1966 license increase and more has been funneled into our land acquisition program. During fiscal 1967 the Division spent 97¢ of every dollar for land, $1.51 during fiscal 1968, and 96¢ during fiscal 1969. This past year (fiscal 1970) the figure was over $2.00.

Thus, the dollar invested by the sportsman four years ago has paid off in 8,081 acres of well-managed wildlife habitat—8,081 acres that will be preserved forever in its natural state and always enjoyed by the general public.

Certainly, the Rocky Gutter acquisition rates as the biggest land deal of 1970. The 1,541-acre tract contains the natural habitat necessary to support most types of wildlife native to Massachusetts and it is expected that the area will shortly become one of the state's best hunting spots.

RESEARCH

For 20 years this Division has been a leader in wildlife research and management programs and many of our biologists are considered experts in their fields. Research efforts in all phases of fish and wildlife biology are carried out at Westboro Field Headquarters. New tools such as air boats, ski mobiles, cannon nets, diving equipment, air craft, computers, and chemicals make these jobs easier.

The Division is continuing to update hatcheries and game farms, making them more efficient and less prone to disease. Certainly, our dramatic success at the McLaughlin Hatchery indicates we're on the right path. The fact only eight men were able to rear 205,000 pounds of trout attests to the efficiency in pool layout and feeding, and the low maintenance requirements of this new facility.

Improvements at Sandwich have continued and plans have been made for improvements at Sunderland.

Advances in game farm production techniques have resulted in our being able to predict cock pheasant production with a greater degree of accuracy. This has resulted in tremendous savings in food and labor costs.

Research in disease control and the development of a forest pheasant is progressing on schedule.

NEW FIELD HEADQUARTERS

After 15 years, the Division has outgrown its present field headquarters in Westboro.

The gift of two buildings and a large tract of land contiguous with our present Westboro Wildlife Management Area seemed to be the answer to our problem. But when the state Bureau of Buildings took a professional look at the old structures, we were advised that it would be more feasible to build. Plans for tearing down the buildings are underway and the floor plans for a new facility have already been submitted.

For 20 years the Division has been a leader in wildlife research and management programs. Here Project Leader Carl Prescott, and Bill Brigham follow up the signals from sonic tag in the belly of a Connecticut River shad.

INCOME

The Board is happy to report that license sales and other income have kept pace with inflation. Of course, we are realistic enough to realize this can't go on forever. With land prices, wages and cost of equipment spiraling upward, we will have to begin looking for new sources of income in the near future. There are many possibilities — help from the General Fund, license increases, special permit fees, and possibly the sale of trout and pheasant stamps.

Edward J. Tierney, whose term expired October 6, 1969, was replaced by Kenneth F. Burns of Shrewsbury on February 17, 1970. There were no further changes in Board membership during this reporting period.

The Fish and Game Board expresses its sincere appreciation to all personnel of the Division for their continued exemplary performance, and wishes also to express its appreciation to the Governor, Executive Council, General Court, and to those other departments, agencies, members of public information media and the general public who have assisted and supported our programs in the past year.

Respectfully submitted,
Harry C. Darling, Chairma
Bradlee E. Gage, Secretary
Henry J. Colombo
Kenneth F. Burns
Martin H. Burns

THE SUPERINTENDENT'S REPORT

Research and Technology

EACH year this Division faces greater obstacles in its efforts to offer high quality outdoor recreation to Massachusetts sportsmen. Fiscal 1970 was no exception. Hampered by ever-increasing population pressures with their accompanying urbanization and environmental destruction, we have had to double our efforts — straining to stay just one jump ahead of the competition.

America has long since passed the point in her social evolution where the sportsman's and the general public's interests could be separated. We must now take the initiative and lay down a firewall against the ecological devastation now raging across our state.

Ironically, the very thing that got us all into this mess in the first place — technology — may get us out again. A few of the by-products of the age of science can be utilized as effective tools for restoring at least a fraction of the environmental quality this country once enjoyed. For example, the completion of the new Charles L. McLaughlin Hatchery was unquestionably the biggest shot in the arm that Massachusetts fishing ever experienced. Our original production goal — 200,000 pounds of trout — was surpassed the first year.

Research, made possible by technological advance was one of the determining factors in making the McLaughlin venture a success.

Hunters as well as fishermen have benefited from new research short cuts. The deer harvest continues its upward spiral with a 1969 kill of 2,002 — 612 more deer than the year before. This did not happen by accident. It is a direct reflection of the condition of one of the most thoroughly researched deer herds in the United States. Computer analysis has aided our biologists immeasurably and is one of the factors responsible for the near perfect condition of the herd.

Computers also play a simple but vital role in the processing of antlerless permits. The number of permits issued can be easily regulated from year to year, depending on current food and herd conditions. The system is perhaps our most valuable management tool.

Because of rapid expansion the herd is experiencing after two years with the antlerless permit system in effect, the Division was able to increase the number of general permits issued for the 1969 season, from 2,000 to 4,000.

Our anadromous fish restoration effort on the Connecticut River has been another area dramatically affected by new research apparatus. Tagging for example, can be extremely important in studying wildlife movements, survival and other pertinent data. Sonic capsules were stuffed into the gullets of a number of shad netted on the River by Division personnel. Portable and land-based monitors were then employed to alert biologists to movements and migratory patterns. The system proved to be particularly useful in recording the possible routes that shad take to bypass obstacles on their upward migrations.

Routine tagging of shad taken in Division gill nets continued to provide the statistics needed to accurately estimate populations and determine migratory patterns. One shad tagged and released at the Holyoke Power Dam on May 29, 1969 travelled 160 miles and was recovered by the Russian trawler Vitebsk on August 20. From Murmansk Russia the tag was mailed to the biological station at St. Andrews, New Brunswick and on, through channels, to Fish and Game Superintendent Colton Bridges in Westboro. The actions of the Russians in this matter received world attention and helped foster the spirit of international scientific cooperation that has accompanied the space age.

Though the Connecticut is still badly polluted, clean-up operations have progressed to the point where the Division has seen fit to initiate an Atlantic salmon restoration program.

During the month of May, salmon smolts were stocked at Crowley's Marina, below the Holyoke Dam, for the third year in succession. From the initial plant of 5,600 in 1968, numbers of salmon stocked increased to 15,300 in 1969, and 54,000 in 1970. Sharing research and management responsibilities were the three other Connecticut River Valley states — Vermont, New Hampshire and Connecticut — the Bureau of Sport Fisheries and Wildlife and the U. S. Bureau of Commercial Fisheries.

The technological "advance" of electric power proved ruinous for the ecology of the Connecticut and many other rivers. Although we now possess the technical equipment to overcome many of the problems, no one is willing to pick up the tab for the fish ladders that could carry the shad and salmon back to their historic spawning grounds.

Routine tagging of shad taken in Division gill nets continued to provide the statistics needed to accurately estimate populations, and determine migratory patterns.

On April 24, Fish and Game officials from the four states and the Bureau of Sport Fisheries and Wildlife met with the Federal Power Commission and the various utility companies that control the barriers to fish migration on the Connecticut.

The meeting resulted in no commitments by the utility companies. The Holyoke Water Power Company maintained that they had done all they intended to do at their own expense as far as fish passage was concerned at the Holyoke Dam.

At Turners Falls, the next upstream dam, the Western Massachusetts Electric Company asserted that fish passage would be incorporated into the dam only when determined feasible by the Federal Power Commission.

Further upstream, Northeast Utilities reported that they had selected a two-foot per second entrance-exit channel at the Northfield Mountain pumped storage project instead of a lesser velocity recommended by four state agencies to minimize fish loss.

The leap-before-you-look brand of technology continues and at the moment, the combined efforts of all the conservation agencies in the country can't seem to check it.

The tragedy of our present situation is that environmental exploitation is unnecessary. From an economic as well as an aesthetic point of view it is nothing less than idiotic. We can have technology without environmental decay and progress without exploitation if we are willing to pay for the controls science offers us. The Massachusetts Division of Fisheries and Game is doing everything in its power to seek out those controls and apply them where they'll do the most good. We have the support of many, but that support must be unanimous if we are to be successful in preserving the sportsman's future and, at the same time, the future of every Massachusetts citizen.

Fish and Game Highlights — Fiscal 1970

Black Bear . . .

On October 28, 1969 two bears, believed at the time to be on a "drunken toot from apple jack," caught the public's eye when they cavorted on a hillside bordering a heavily-traveled highway in Florida, Mass. To protect the vulnerable pair, Director James M. Shepard using emergency regulatory powers with the full backing of the Fish and Game Board, closed the black bear season. Massachusetts bears had stepped up from obscurity and into the national headlines. They would not step down for the rest of the fiscal year.

Bear have always been an oddity in Massachusetts, usually stumbled onto by a handful of deer hunters out of the many thousands that comb Bay State woods each fall. But now interest had been kindled and the bear controversy blazed hot throughout the winter and into early spring.

Then on April 7, the five-man Fish and Game Board, at the request of Director Shepard, held a public hearing in Pittsfield for the convenience of those people expressing an interest in bear.

Division personnel participating in the hearing were Assistant Director Russell Cookingham, Superintendent of Research and Management Colton Bridges, and Winston Saville, Western District Game Manager. Other wildlife experts contributing testimony were Dr. Joseph Larson of the University of Massachusetts; two bear biologists from New York — Gene McCaffry and Bob Miller — and Massachusetts Natural Resource Officer William Kulish.

Almost to the man, the 75 sportsmen, conservationists and preservationists in attendance favored some change in the existing regulations, ranging from a five-year moratorium to a shortened season.

By May 5, the Board had made its decision and a news release issued to press and organizations on that date read as follows. "This fall, for the first time, bears may only be taken for one week — November 16 to November 21 — with rifles larger than .23 caliber. In addition, hunters must have special permits, restrict their hunting to "bear range counties" — Berkshire, Hampden, Hampshire, Franklin and Worcester — and tag and register their kills at official checking stations.

". . . the Division feels confident that its new regulation will help protect our present bear population, ensure its continuing growth, and control the few animals that may become nuisances. Examination of individual specimens is vital to the success of any biological survey and the new law will allow Division biologists to examine any kill and remove portions of it for study. Reports from checking stations will also give the Division a yardstick with which to measure (and manage) the existing population."

But the bear story hadn't ended yet and during the first week in June three different Massachusetts bears made the headlines. The first road kill in the state's history occurred on May 27, at 7:15 P.M. on the Mass. Pike near Russell. Two hours later another bear was struck by a car on the Mohawk Trail four miles east of Florida. This one, however, was luckier (see **Information and Education, page 25**) and ambled off into the woods apparently unharmed.

The following week another bear walked into Florida, Massachusetts. Natural Resources officers drugged and moved the animal but it returned in a few days. Division Biologist Jim McDonough was called to the scene and destroyed the animal with an overdose of tranquilizer.

Hunter Orange . . .

The following specifications were established tor defining hunter orange, that bright orange material that has reduced Massachusetts hunting accidents 67 percent. "Hunter orange must be a daylight fluorescent orange with a dominant wave length between 595 and 605 manometers, excitation purity of not less than 85 percent and luminance factor of not less than 40 percent.

Deer hunters were required to wear 400 square inches of the material (500 square inches on chest, back and head for the 1970 season). Hats were required on wildlife management areas.

Youth Upland Game Hunt . . .

The first Division-sponsored youth upland game hunt for newly-licensed youngsters between the ages of 15 and 17, proved to be tremendously successful. Total youth participation was 44. Much was learned about hunting skills, good sportsmanship and gun safety.

Shepard Appointed Committee Chairman . . .

On September 11, 1969 Fish and Game Director James M. Shepard was appointed Program Committee Chairman for the 1970 conference of the International Association of Game, Fish, and Conservation Commissioners. Shepard also served on the Association's legislative committee for the year following his appointment.

Kenneth F. Burns Appointed to the Board . . .

On February 23, 1970, Kenneth F. Burns of 425 Grafton St., Shrewsbury — retired Police Chief of that town — was appointed to the five-man Fish and Game Board by Governor Francis Sargent. Burns succeeded Edward J. Tierney of Pittsfield whose term had expired.

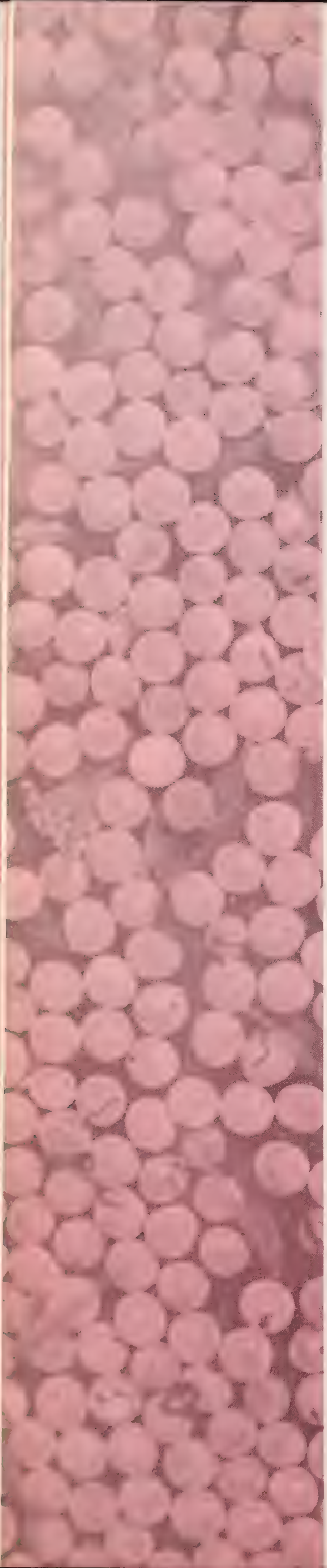
Fresh Water Awards Presentation . . .

At the ceremony held April 11, 1970 at the Division's new McLaughlin Hatchery in Belchertown, Commerce and Development Commissioner Carroll P. Sheehan presented awards to new holders of Massachusetts fresh water fish records. Two state records were broken with a 2-lb. 8-oz. white perch caught by Manuel P. Souza of North Dartmouth, and a 6-lb. 12-oz. bullhead caught by Gerard Giove, 17, of Everett.

The Massachusetts Fresh Water Awards Program is sponsored by Commerce and Development and encourages fishing throughout the state. It has also proven to be a valuable indicator for fisheries management.

Respectfully submitted,
Colton H. Bridges, Superintendent

Black bear, usually an oddity in Massachusetts, walked away with the headlines this year. Below: A teenage hunter and his guide enjoy themselves on the first Division-sponsored Youth Upland Game Hunt.



FISHERIES

RESEARCH and management programs of the fisheries section during the 1970 fiscal year continued to progress under the following categories: Anadromous Fish Restoration Programs on Connecticut, Merrimack, North and Palmer Rivers; Coldwater Fisheries Inestigations which included studies on Quabbin Reservoir, Littleville Reservoir and Onota Lake; Warmwater Fisheries Investigations which involved water quality, fish population and weed control studies, Pesticide Studies, Statewide Development and Propagation.

REPORT

ANADROMOUS FISH RESTORATION PROJECTS

The restoration of anadromous fish in the Connecticut and Merrimack Rivers is continuing through the cooperative efforts of Massachusetts, Vermont, Connecticut, New Hampshire, the Bureau of Sport Fisheries and Wildlife, and National Marine Fisheries Service.

In December of 1969, acting under state statute, with full concurrence of the other Connecticut River Basin states, the Division issued an order to the Holyoke Water Power Company for the construction of a fish barrier dam at Holyoke for the purpose of eliminating shad mortality and upstream migrant delays. The order was subsequently amended to suspend, on an indefinite basis, the dates for compliance in order to allow for informal discussions to proceed with the Federal Power Commission.

An informal hearing was held in Chicopee on April 19, 1970 and both the fishery interests and the Holyoke Water Power Company maintained original positions without compromise.

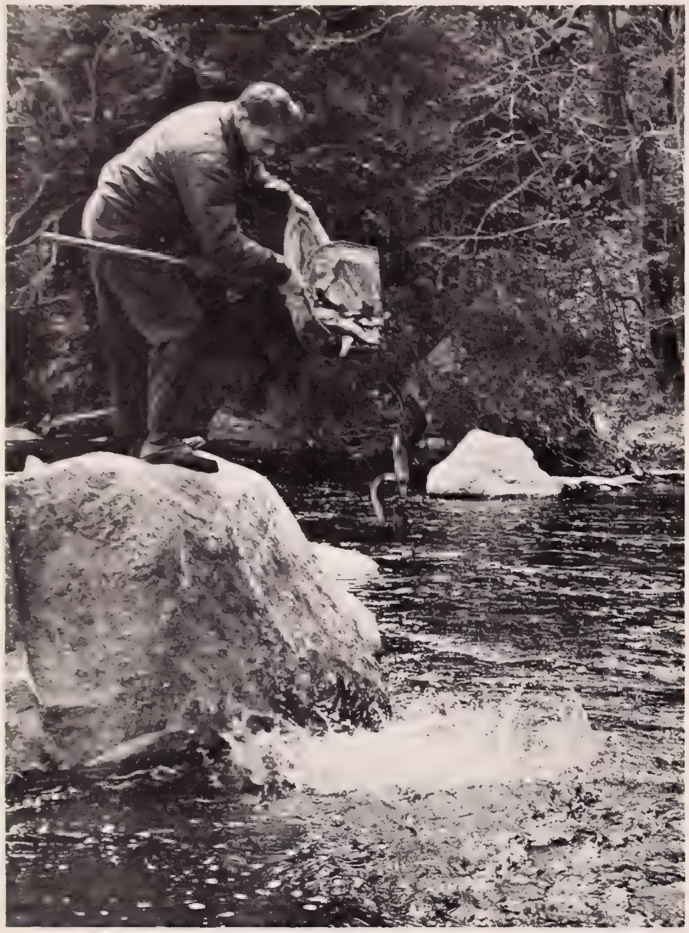
The original order isued in December is being contested in U. S. District Court, Boston by the company.

Massachusetts has been actively involved in several projects under the 1970 Anadromous Fish Program. This year the four states and Bureau of Sport Fisheries and Wildlife collectively stocked approximately 53,000 Atlantic salmon smolts in the Connecticut River below the Holyoke Dam. In addition, 1,095 adult American shad were tagged, raising the number to 3,533 shad tagged in the last three years. Information gathered from tag returns will help in estimating the numbers of shad entering the tailwaters of the Holyoke Dam and will also reveal some of the migratory habits of shad native to the Connecticut River.

Approximately 3,000,000 eggs were stripped from shad below the Holyoke Dam and planted in the Nemasket and Merrimack Rivers. Two hundred and fifty thousand eggs were planted in the Merrimack River below Concord, New Hampshire. This fall juvenile shad were present in considerable numbers at Garvin Falls, New Hampshire.

The creel census on shad taken below Holyoke Dam indicates a substantial increase in the number of fishermen and number of fish caught at Holyoke. Creel census studies to measure angler harvest and shad utilization were also conducted on the Palmer and North Rivers.

Connecticut River crew nets shad for tagging, below Holyoke Dam. Below: Shad carrying sonic tags are held in conditioning cage prior to release.



During the 1969-70 season, 1,830,737 trout weighing 561,616 pounds were liberated in ponds and streams throughout the Commonwealth.

Investigation of shad movements in the area that may be influenced by the Northfield Pumped Storage Plant were initiated in 1969-1970. The movements of 14 sonic-tagged shad were traced above and below the plant site.

COLDWATER FISHERIES INVESTIGATIONS

During the season from April to October, Quabbin Reservoir creel census indicates that 51,981 anglers harvested 54,727 fish weighing a total of 42,029 pounds. These figures represent an increase of nine percent in the number of anglers, 20 percent in number of fish caught, and 17 percent in total number of pounds of fish. However, in general, harvests of salmonids remained relatively stable with those of 1968. The increase in the rainbow trout harvest was attributable to the stocking of 20,000 nine-inch plus fish in July, 1969.

A total of 373 landlock salmon were harvested in 1969. Even though salmon continued to increase in the angler harvest, a satisfactory sport fishery has yet to be achieved due to less than optimum numbers of spring yearling salmon available for stocking. Seventy-six percent of the salmon harvest originated from the 1967 yearling plant, 24 percent from the 1968 releases. No salmon spawning was documented on the tributary streams in the fall of 1968.

Lake trout numbers continued to decline. The total harvest of lake trout was 1,275 fish. The growth rates of the present lake trout population increased. The average condition factor ($W=KL^3$) for 1969 was 0.92 as compared to 0.79 in 1966. Approximately 22,800 lake trout fingerlings were stocked and 200,000 eggs were secured for hatching with resultant fingerlings to be released in Quabbin Reservoir.

So that the present population could be evaluated, no smelt were stocked in Quabbin Reservoir during the spring of 1970. Smelt were stocked prior to 1970 to re-establish a forage base for salmonids. Stomach analysis of salmonids and other fish taken in 1969 indicate that smelt are being utilized as food. Also, observations of spawning adults, and egg masses indicate a rapid re-establishment of smelt. The sex ratio of these smelt was 6:1, males to females.

During the season from April to October, 51,981 Quabbin anglers caught 54,727 fish — 20 percent more than the year before. Previous stocking of smelt by the Division may have figured into this increased harvest.

In order to alleviate any problems the smelt might create at the intakes,the feasibility of a self-cleaning screen is being studied by the consulting firm, Camp, Dresser and McKee.

A creel census of Littleville Reservoir was carried out during the 1969 fishing season. Creel data was expanded, with the following results: 13,222 anglers fished 43,515 hours and harvested 12,020 trout weighing 2,377 pounds; 232 warmwater fish weighing 34 pounds were harvested. Trout made up 92 percent of the total catch, with brown trout being the most abundant species caught. This was due in part to the release of 2,000 fin-clipped brown trout of which 72 percent (expanded data) were taken by anglers. Total pressure was 158 hours of angling per acre that resulted in a harvest of nine pounds per acre.

Efforts to establish a coldwater fishery in Littleville Reservoir probably have been nullified as recontamination of warmwater fishes has occurred. Fish population sampling (205 pounds) revealed a species composition similar to that prior to reclamation.

The Kokanee salmon project for Onota Lake continued into the third year with a release of 101,000 fingerling salmon this past spring. These fingerlings resulted from the 200,000 Kokanee eggs obtained from the Connecticut Board of Fisheries and Game. Limited gill netting failed to recover any Kokanee salmon, but a more intensive sampling of Onota Lake will be initiated. Preliminary indication is that interspecific competition from smelt may preclude Kokanee salmon establshment in the lake.

During the past year, work progressed on the trout allocation program to the extent of having all streams in the state evaluated by District personnel as to their relative degree of fishing intensity. In addition, all streams were looked at in view of the demand for angling that exists within a twenty-mile radius. Both of these additional pieces of data were incorporated into a computer program which is now capable of providing five transformations of various factors into a trout stocking figure for each individual stream.

This work will continue to be reviewed with the objective of obtaining an equitable trout distribution system for our streams.

The Charles River watershed was sampled at 28 stations, using rotenone, electro-fishing gear, gill nets and a seine. Physical and chemical data were collected at each station. There were 4,213 fish collected representing 29 species. The fish sample by number consisted of 11.7 percent game fish; 31.3 percent pan fish and 57.0 percent trash or forage fish. Of the fourteen species aged, only chain pickerel exhibited growth rate above the state average. The survey data, plus angler checks indicate that fish populations are underharvested.

WARMWATER FISHERIES INVESTIGATION

Seven jobs are providing data for the management of our warmwater fisheries. These deal with forage, new species introduction, angling pressure and effect of aquatic weed removal on fish.

In the summer and fall of 1969, the present distribution of a previously introduced population of land-locked alewives was determined throughout the three basins that make up Congamond Lakes. These forage fish are now well established and are being utilized as food by chain pickerel, brown and rainbow trout.

Ten walleyed pike were taken by electro-fishing in Lake Chauncey during 1969. These fish ranged between 16.0 and 25.0 inches in length and 1.5 to 5.6 pounds in weight. No evidence of the 1968, 1967 and 1966 year classes of walleye fry stocked in the spring of those years was discovered.

Northern pike population samples from Brimfield and Cheshire Reservoirs were made with electro-fishing gear in the fall of 1969. One seven-inch northern was collected from Cheshire and none were collected from Brimfield.

During the winter of 1969-70 an ice fisherman creel census carried out at both locations listed 38 northern pike between 9 and 33 inches caught in Cheshire, but none in Brimfield. It was concluded that the Brimfield introduction failed.

An estimate of warmwater fishes harvested from Quabbin Reservoir showed the average length of largemouth bass checked to be 18.2 inches; smallmouth bass averaged 17.1 inches and chain pickerel 22.5 inches.

Emergent vegetation in Little Chauncey Pond, Northboro was treated with a pelleted form of 2, 4-D and 2, 4, 5-T. Fish population samples were taken before and after application. These samples, plus

TROUT DISTRIBUTION FROM STATE AND FEDERAL HATCHERIES

July 1, 1969 to June 30, 1970

Brooks 6 inches plus	**Browns** 6 inches plus	**Rainbows** 6 inches plus	Total State Trout
341,484	77,266	835,991	1,254,661

Total Trout Distribution 6 to 9 inches	881,925	
Total Trout Distribution 9 inches plus	372,736	
Total Federal Trout Distribution 6 inches plus	88,294	
Total Catchables		
(6 inches plus)		1,342,955
(6 inches minus)		576,076
		1,919,031

STATION POUNDAGE

Station:	Total lbs.	
McLaughlin Hatchery	206,102	
Montague Hatchery	85,203	
Palmer Hatchery	10,800	
Sandwich Hatchery	117,042	
Sunderland Hatchery	142,469	
Total State Poundage		561,616
North Attleboro	20,353	
Nashua, New Hampshire	6,950	
Total Federal Poundage		27,303
Grand Total		588,919

This table includes trout stocked in reclaimed waters. It does not include those retained for brood stock.

Stream improvement by Boy Scouts and members of the Division's Conservation Camp helps the Division provide quality trout fishing.

visual observation of the effect of these chemicals indicated that it eliminated emergent aquatic vegetation with no observed negative effects upon fish or animal life present in the pond. Similar results were obtained from eight other ponds previously treated for aquatic weeds by the Massachusetts Division of Forests and Parks. Post treatment fish population samples revealed presence of typical populations of warmwater fishes in each pond except Stearns Pond in North Andover which was almost devoid of fish life.

The relationship between water quality, basic fertility and standing crop could not be statistically analyzed in six ponds because of the wide ranges in variability, and limited sample size.

Water quality background data is available on approximately 125 Massachusetts waters. Work was undertaken to compile the data and analyze it for subsequent evaluation in terms of pond fertility. Benefits to be anticipated from this computerized data processing are: (1) indexing of chemical data on Massachusetts waters, (2) storage and retrieval of information for ready accessibility in many desired combinations.

Library material was screened and a questionnaire circulated to initiate a study that is expected to reveal possibilities of edaphic alterations to favor fish production. Fertilization of lakes and ponds is not practical for Massachusetts water. However, liming appears to hold promise for waters of low fertility.

PESTICIDES

The Federal Water Pollution Control Administration had been financially supporting the Massachusetts Pesticide Monitoring Study over the past four years with a demonstration grant. In June of 1969, the FWPCA informed the Division of Fisheries and Game that the grant would terminate in January of 1970, and in the interim the funds would be decreased one-half and no additional research would be conducted. During the ensuing seven-month period, the results of the past four years of statewide pesticide monitoring were compiled and re-analysis of a representative fish from each of the 75 sampling stations revealed the presence of polychlorinated biphenyls.

Polychlorinated biphenyls (PCB's) are plasticizers used in the manufacturing of various products and have been identified in eleven of the seventy-five stations that were monitored in 1968.

In February, 1970, the Massachusetts Division of Water Pollution Control awarded a $132,000 research grant to the Division of Fisheries and Game to continue and expand the monitoring of major watersheds in the Commonwealth.

During the twelve-month period, June 1969 through July 1970, the pesticide laboratory analyzed 107 samples for pesticides and PCB's. Among these samples, 13 fish represented various fish kills, 17 birds were analyzed for the Massachusetts Audubon Society and 75 fish were re-analyzed for the monitoring program. In addition, various other analyses were conducted in relation to the projects. Full cooperation was given to the Massachusetts Pesticide Board in formulating regulations on the use and application of hard pesticides.

STATEWIDE DEVELOPMENT PROJECTS

During 1969, maintenance and development of roads for fishermen access on the Squannacook River, Birch Hill Area, Westville Area and Swift River were continued. A boat ramp was constructed at Mascopic Lake with the assistance of the towns of Dracut and Tyngsboro. Debris jams were removed from the Squannacook River to create more accessible water for fishing through wading and canoeing.

Also under the development project four ponds totaling 154 surface acres were reclaimed for trout and warmwater management. The following ponds were treated: Flax Pond and Higgins Pond, Brewster; Hathaway Pond, Barstable; and Stiles Pond, Boxford.

FISH PROPAGATION ACTIVITIES

Maintenance of two warmwater fish culture pond systems continued. Chain pickerel weighing a total of 205.6 pounds and largemouth bass weighing a total of 514 pounds were produced and stocked from the Merrill Pond system, Sutton. Five hundred and forty-one pounds of smallmouth bass and 317 pounds of largemouth bass were produced and stocked from the Harold Parker System, North Andover.

During 1969-1970, 1,830,737 trout or 561,616 pounds of fish were liberated in ponds and streams throughout the Commonwealth. An additional 88,294 trout or 27,303 pounds were received from the Bureau of Sport Fisheries and Wildlife for stocking in Massachusetts.

Palmer Hatchery was taken out of trout production and converted into an experimental salmon hatching and rearing station. The objectives are to provide smolts and yearling Atlantic salmon (sea-run and land-locked), Kokanee salmon, lake trout and other salmonoids for stocking the Connecticut River, Quabbin Reservoir and other experimental state waters.

The McLaughlin Hatchery attained the anticipated trout production goal of 200,000 pounds for 1969-1970. Brook and brown trout culture were instituted for the first time at this station.

Trout nutrition experiments are still in progress. Disease monitoring and proper treatment if necessary, were undertaken at state hatcheries.

MASSACHUSETTS COOPERATIVE FISHERIES RESEARCH UNIT

The following projects funded in part by the Division of Fisheries and Game have been worked on by the Cooperative Unit in the past year:

Connecticut River Shad Projects:

Work continued on the Embryology of the American Shad in the Connecticut River under various water temperatures. Spawning sites were tested based on meter net collections using "known aged eggs", and ways to improve shad fecundity were investigated.

Studies are also being conducted on the migration and behavior of the American Shad as affected by environmental parameters in the Connecticut River.

The study on the distribution and abundance of juvenile shad in the Connecticut River above the Holyoke Dam, Massachusetts includes estimates of population size, mortality rate, migration time above the dam, as well as the patterns, controlling factors and time of migration for both adult and juvenile shad.

Studies were completed on the relationship of available flora and fauna to the actual food intake of juvenile American shad in the Connecticut River. Also, the river between Holyoke and Turners Falls dam was assessed for its nursery potential.

Blueback Herring Project:

Studies on the life history aspect of the blueback herring in the Connecticut River are still being conducted. These fish, along with American shad, have passed over the Holyoke Dam since 1955. Approximately 10,000 blueback herring were lifted over the structure in 1969.

Creel Survey Design Project:

An evaluation of the creel survey design used on Quabbin Reservoir has been recently completed. The study revealed that the creel survey design employed by the Division of Fisheries and Game is suitable for Quabbin Reservoir.

Respectfully submitted,
Louis H. Carufel
Chief Aquatic Biologist

COMMONWEALTH
OF
MASSACHUSETTS
DIVISION OF FISHERIES AND GAME
CHARLES L. McLAUGHLIN
TROUT HATCHERY

The McLaughlin Hatchery — First 365 Days

The McLaughlin Hatchery, the biggest single financial venture ever undertaken in the history of the Massachusetts Division of Fisheries and Game, was completed March 1, 1969. The installation was built at a cost of $1.5 million, financed by bond money, to be paid back through revenues derived from Fish and Game licenses.

Fish and Game administrators realized as far back as the early 50's that Massachusetts trout hatchery facilities were not adequate in size or numbers to produce trout in needed quantities. Charles L. McLaughlin, Director of the Division during the late 50's and early 60's, first conceived the idea of the new hatchery and determined an approximate location. However, with his death in 1963, tentative plans disintegrated. Initial planning was started once again under the administration of our present Director, James M. Shepard, and ground breaking took place in November of 1967. Sixteen months later, the hatchery was completed.

Because of the availability of disease-free, high-quality eggs, rainbows were chosen for the first year of rearing. Rainbow trout can also be cultured successfully in a wider range of conditions that might occur in the operation of a new, untested hatchery. The first year was needed to evaluate the many variable conditions such as water quality, temperature, growth rates and other parameters of hatchery operation that determine management procedures.

Production started February 15, with the reception of eyed eggs from a commercial hatchery in the state of Washington. In the past, other state hatcheries had found these eggs to be of a superior strain.

Also, during the spring of 1969, about 85,000 year-old, disease-free rainbows were brought in from the Berkshire Hatchery which was being phased out by the state. About 25,000 were earmarked for the Swift River and Quabbin Reservoir. This was a precautionary measure to prevent disease from other hatcheries from contaminating McLaughlin's water supply. The remaining 60,000 fish were to be held over for two-year-olds and stocked in the spring of 1970.

Thus, by late spring of 1969, the hatchery contained 80,000 yearlings and about 500,000 fingerlings, all rainbows. At this time the Division thought that at least two years would be required to fill the almost two miles of concrete rearing tanks with trout.

The summer of 1969 proved that all speculations on growth were gross underestimates. The many complex factors that are necessary to efficiently produce trout — water quality, temperature, good hatchery design, nutrition and type and strain of fish — all began to dove-tail, indicating a successful and well-coordinated operation.

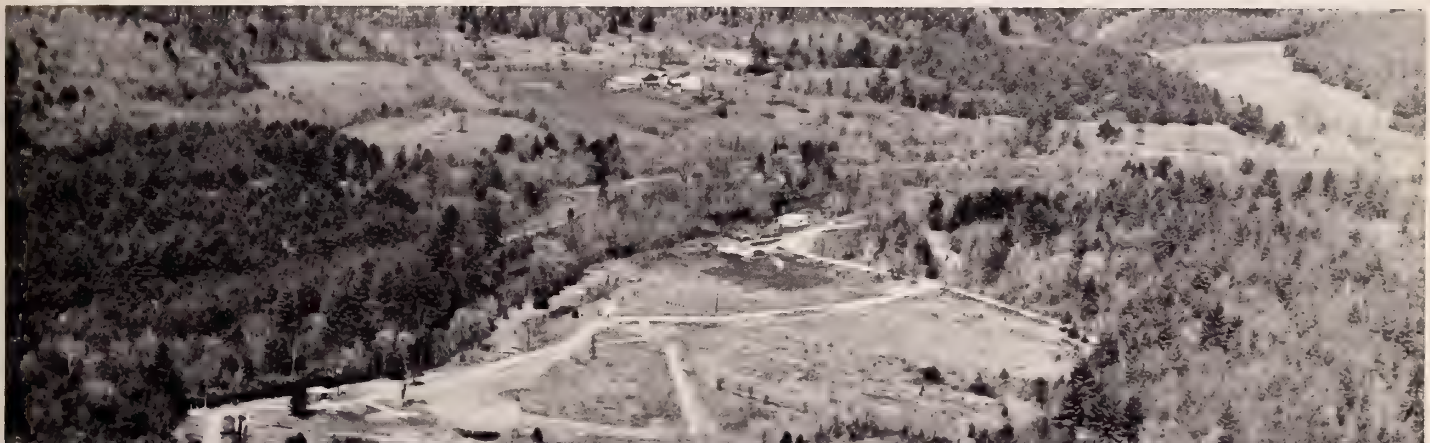
By the fall of 1969, all of the 200 eight-by 50-foot rearing tanks were filled with rainbow trout. By the end of October, just eight months after hatching, the fingerlings were averaging seven inches and better. The yearlings were well up in the 12-to 15-inch class.

The hatchery was designed to produce 200,000 pounds of trout on an annual basis but in the very first year of operation this goal was surpassed.

Presently 400,000 rainbows and 55,000 browns are being raised for spring stocking in 1971.

Although trout production is of course the primary purpose of a hatchery, public relation work through the accommodation of visitors can be a bonus benefit to fishing. Since the beginning of operation, the interest shown by people visiting the installation has been astonishing. If this interest continues, enlarged visitor facilities such as larger parking areas, permanent tour-guide personnel and audio-visual equipment, will be needed. It might be noted that a large percentage of the visitors are not license buyers, and therefore do not finance our program. Since Fish and Game is funded through license sales, visitors gain a great deal of knowledge and enjoyment solely at the expense of the sportsman. But decidedly, the investment is a sound one, for the future of fishing all over the state is in the hands of the general public — not just sportsmen.

In summation, the first year of production would certainly suggest that the McLaughlin Hatchery will add greatly in providing the needed trout to the management program in Massachusetts. It would also appear that stockable trout, will be produced at a lower cost and therefore offer the license buyer greater returns on his invested capital.



SOLD

SUTTON FISH HATCHERY

The Division sold its oldest hatchery to the Town of Sutton on March 10, 1970 due to critical water shortage. The Sutton Hatchery, which at one time served as a combination game farm — fish rearing facility, was purchased in the late 1800's. It operated until 1967.

Water problems at Sutton have hampered fish rearing efforts for years. The hatchery was closed during World War II and when we reopened it in April of 1946, water was scarcer than ever. In our annual report for that fiscal year we reported: "A gas shovel was hired to deepen the brook beginning on the hatchery property and extending up the brook to the source of headwaters. An attempt was also made to drive artesian wells but without success."

In the years that followed expanding gravel pits in the immediate vicinity of the hatchery (see picture on right) disrupted local hydrology and compounded the water crisis.

In addition to the Sutton Hatchery, two more facilities were phased out of trout production. These were Palmer Hachery (now devoted to salmon) and Berkshire Hatchery (returned to the Federal government). The slack was taken up by the new Charles L. McLaughlin Hatchery in Belchertown. Although the three hatcheries together employed two more men than McLaughlin, their combined output was only 30 percent of McLaughlin's present production.

LANDS AND WATERS ACQUISITION

IT is, for some reason, customary to elaborate on highlights in an annual report. However, in this case one or two acquisitions would be discussed at great length while the others would be reported with little or no discussion.

The Division's acquisition program is predicated on the theory that every acquisition is important and will be beneficial to our sportsmen. Each proposed purchase is reviewed and thoroughly discussed by a land committee, the Director and the Board before final action is taken. This procedure is followed in all proposed acquisitions, whether they be for five acres or five hundred acres.

Based on the size and location, the Rocky Gutter acquisition in Middleboro would have to be considered as one of the most important ones worked on in the past year. This purchase was for 1,541 acres, with an additional 150 acres under option.

INTER-AGENCY COOPERATION PAYS OFF — PUBLIC BENEFITS

BUCK Hill Pond, a ten-acre, warm-water pond built by the U. S. Soil Conservation Service within the Buck Hill Conservation Center in Spencer, has received a stocking of several hundred fish of eight different species. Game Manager Robert Corrinet of the Central Wildlife District, Mass. Division of Fisheries and Game, and technicians Walter Dauderis, Roscoe Bicknell and John Bicknell, working with Division of Forests and Parks personnel under the direction of Dann Colburn, successfully netted fish from Eames Pond in Paxton and transported them to the conservation pond. Eames Pond is being drained by Forests and Parks in preparation for repairs to the dam.

The stocking will provide excellent fishing at Buck Hill since most of the fish are adults of substantial size including many trophy-sized pickerel, bullheads and crappies. This is the second stocking of fish made by the Division here. The numbers and variety of fish introduced are expected to meet all the immediate demands for fishing and should furnish plenty of breeding stock for reproductive purposes. Good recreational fishing is not the sole objective of fisheries management at Buck Hill Pond, however. The release of a large variety of species has been deliberate in order to provide optimum opportunities for fish identification, discussion of good and poor fisheries management practices, successful fishing techniques and other educational purposes.

Paul Mugford, Central District Wildlife Manager, had high praise for the Buck Hill Conservation Center, a 70-acre conservation-demonstration area off McCormick Road, Spencer. Mugford said, "It is within easy walking distance of the Massachusetts Junior Conservation Camp and is owned by the Worcester County 4-H Center, Inc. Planning and development of the center is a classic example of inter-agency cooperation. Participating state, Federal, and regional agencies include: the U. S. Soil Conservation Service, Agricultural Stabilization and Conservation Service, Massachusetts Division of Fisheries and Game, Massachusetts Division of Forests and Parks, U. S. Fish and Wildlife Service, Worcester County Extension Service, Worcester County Conservation Districts, University of Massachusetts, and the Massachusetts Department of Education."

The area now contains the natural habitat to support many species of wildlife and provides an excellent hunting area. It is anticipated that as soon as a sound wildlife management program is put into operation, Rocky Gutter will become one of the most popular areas in Eastern Massachusetts. It fills a void in an important section of the state.

Long range plans for the development of the Swift River Wildlife Management area have been in the works for quite some time. Standing in the way of their completion, have been two key parcels that we have not been able to acquire. This year both were purchased. They should help this area realize its great potential. The 115-acre area, across the road from the McLaughlin Hatchery, is a vital pollution shield and was acquired when we became aware that it was being considered for development.

Typical of sportsmen's concern for the environment was the recent gift of 200 acres of excellent wildlife habitat presented to the Division September 28, 1969 by the Auburn Sportsmen's Club.

FOUR CHIMNEYS
WILDLIFE MANAGEMENT AREA
MASS. DIV. OF FISHERIES & GAME
PRESENTED BY THE
AUBURN SPORTSMAN'S CLUB INC.
1968

The second acquisition at Swift River was the 90-acre privately-operated camping area known as Robin Farm. The Division purchased the land, buildings and all the facilities included therein. Besides the river frontage, there are three small ponds which will be utilized for a number of activities. It is anticipated that the large building known as the Lodge will be converted into the headquarters for the new wildlife district, as yet unnamed. It is further hoped that plans for the utilization of this area by fishermen will be formulated prior to next year's fishing season.

Approximately 100 acres were added to the Chester Wildlife Management Area, which is located in the Towns of Chester, Huntington, Worthington, and Chesterfield. The area now contains approximately 1,650 acres and extends from the Knightville Flood Control Area, on which the Division has a use permit, to within a short distance of the Littleville Flood Control Area. Key parcels were also added to the Northeast Management Area in Newbury and the Winimesset Brook Management Area in New Braintree.

Four parcels containing about 65 acres were added to the Squannacook River Area. Of these, three contained river frontage and access to the river. Two of the areas located just below the Harbor Pond were key pieces in as much as the owners had been giving serious consideration to developing them into camp sites. The V.F.W. parcel in West Townsend contains river frontage, a pond and ample parking area along Route 119. There is also potential for a ramp on this site. The fourth parcel, although not on the river, is a key piece inasmuch as it will make it possible for the Division to build a new access road in the West Groton section of the river.

When acquisition guidelines were decided on three years ago it was agreed by all concerned that the acquisition of river frontage and access points should be stressed. Accordingly, an effort in this direction was made again this year. Our work received a big boost when the Council of Sportsmen's Clubs of Hampden County, Inc. gave us 80 acres along the East Branch of the Westfield River in Cummington. The Division is most grateful for this valuable gift which will, we know, enhance the enjoyment of countless fishermen and hopefully will inspire other organizations and individuals to make similar contributions.

The Division purchased four acres on the Quaboag River in the Town of Warren. This includes river frontage in addition to a well-established access point and a large parking area along Route No. 67. The area has always been very popular with fishermen and now they are assured of its continued availability.

Thirty-two acres were purchased along the Quinapoxet River in Holden. This land is adjacent to river frontage owned by the M.D.C. and also contains ample space for parking. Seventy-two acres along the Millers River were purchased, adding another link to the extensive holdings owned by the Division along this river.

The Division acquired part of another river, excellent from the standpoint of both trout fishing and wilderness beauty. Working with the Pepperell Conservation Commission and the Trust set up to preserve and protect the Nissitissit River, 63 acres were purchased by this Division in the Town of Pepperell. This is a start in what is hoped will be an acquisition program similar to what has taken place on the Squannacook River. Middlesex County is indeed fortunate in having two high-calibre trout streams (the Squannacook and Nissitissit) within such a heavily populated County. The fact that most of the shore line along the Squannacook from its source to West Groton is now in public ownership should be a source of satisfaction for the Middlesex County League of Sportsmen's Clubs, who gave so freely of their time and money to make this a reality. It would seem that the group working to preserve the Nissitissit River will some day feel the same satisfaction.

Salt marsh land, so important to ecology and, unhappily so exploited, became an important consideration in this year's reality program. Two acquisitions were added to our present holdings on the North Shore. The Division also moved South of Boston, purchasing 22 acres in the Town of Fairhaven. Our intent is to expand these holdings since fee title to salt marsh is a sure way to preserve it in its natural state.

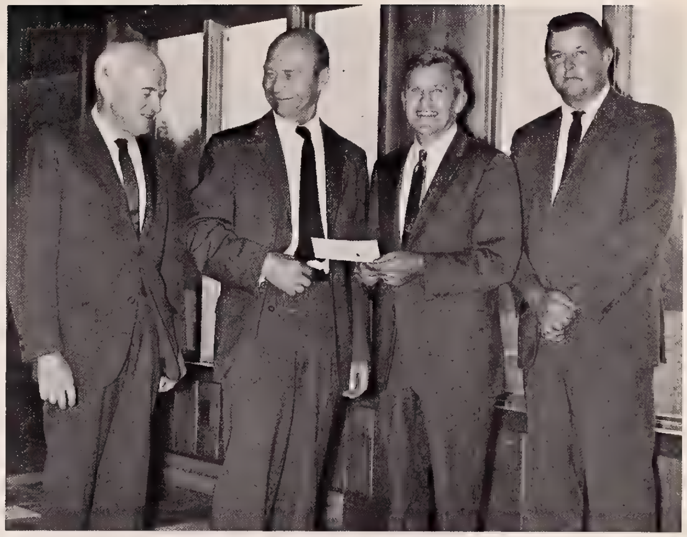
Personnel of the Section spend as much time as possible plotting the Division's land holdings on topographic maps and keeping the land inventories up-to-date. Surveys were run on several parcels being purchased and many prospective sellers were interviewed.

This year, for the first time, the Division received a promise of Federal help in the acquisition program from the Bureau of Outdoor Recreation. The project papers for the acquisition of the Rocky Gutter purchase in Middleboro and the two purchases in Belchertown were submitted to that agency and subsequently approved. When the appraisals are approved by the B.O.R., a reimbursement up to fifty percent of the purchase price is anticipated. We would like to express our sincere thanks to Commissioner of Natural Resources, Arthur W. Brownell — who acts as State Liaison Officer with the B.O.R. — for his guidance, and assistance in preparing these two projects. At first glance, one might think that any reimbursements would be credited to the land and water acquisition account and the monies could again be used for other acquisitions. However, this is not the way it works. When these reimbursements are received they will be credited to the Inland Fisheries and Game Fund.

Now nearly everyone is expressing great concern about our environment. Almost daily, articles appear in our press decrying the desecration of our natural resources. This interest in our environment should be encouraged and applauded — provided those doing all the talking are willing to take action. Unfortunately, the environment and its preservation doesn't seem as important when one is asked to personally contribute to the cause. As long as the state and federal government provide the money needed "conservation is great."

Licensed sportsmen realized that our resources and environment were in trouble years before the drum beaters made headlines. Sportsmen's pleas for money to purchase and protect lands and waters from exploitation fell on deaf ears. "If the sportsman wants a place to hunt and fish, let him go out and buy it" was the prevailing attitude — even though millions were being made available to provide for other forms of outdoor recreation. To the everlasting credit of that great fraternity of men and women who enjoy hunting and fishing in Massachusetts, they rose to the occasion, and proved that America was worth preserving. They accepted a dollar increase in their license fees to make funds available for the acquisition of land and waters throughout the state. Today, a few short years later, these same license holders can point with pride to the thousands of acres of land, and miles of stream bank they have acquired, and proclaim with justifiable pride, "We have accepted your challenge and are acting with sincerity and determination."

Respectfully submited,
Joseph Johnson, Chief of Realty



A key purchase was the 90-acre Robin Farm along the Swift River. From left to right: Joe Johnson, Chief of Realty; Henry Renouff, former owner; Director Shepard; and Bradlee Gage, Board Secretary.

COOPERATION

At Westfield Flood Control Area

IN November 1962, the Secretary of the Army granted a license to the Division for the use of about 385 acres of land and water in the Westfield Reservoir Area located in the Town of Sturbridge. Because waters impounded behind the Westfield Dam were expected to occasionally inundate the tract, permanent roads were relocated at higher elevations. One of the original roads, Mashapaug Road, that follows the Quinebaug River, continued to be used by visitors to the area and by persons who were merely passing through.

From 1963 to 1968, the Division maintained the road by patching, and cleaning ditches and culverts. However, by 1969 the road had seriously deteriorated, and the rehabilitation required was beyond our limited capabilities.

The problem was overcome through cooperation between the Division and the Town of Sturbridge Highway Department. After some reconnaissance and discussion, the town agreed to provide specialized road maintenance machinery and experienced operators, while the Division chipped in with a work crew, other specialized equipment and the capital needed to pay for materials used.

In two days of cooperative effort during the fall of 1969, the mile-long road was swept, thoroughly patched, a washed out culvert was replaced, and the entire road was sanded and sealed.

Sturbridge is just one of a dozen towns that have cooperated in ventures that will increase recreational and sight-seeing opportunities in Massachusetts.

LEGISLATION

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1970:

Chapter 102 —	An act increasing the penalty for importing and liberating certain fish and game within the Commonwealth.
Chapter 131 —	An act prohibiting any person from hunting during the pheasant and quail season on public shooting grounds or Wildlife Management Areas where pheasant or quail are stocked without wearing a "hunter orange" cap or hat.
	An act shortening the bear season to one week (from the third Monday in November to the following Saturday) and permitting hunters with valid permits and using rifles with a .23 caliber bore and over to harvest one bear in any of the following counties: Berkshire, Franklin, Hampden, Hampshire, and Worcester.
Chapter 136 —	An act providing that action required for the protection of certain fisheries in inland waters be assigned to the Director of Water Pollution Control.
Chapter 167 —	An act further regulating the wearing of hunting clothes during the deer season.
Chapter 183 —	An act prohibiting hunting from a snowmobile.
Chapter 224 —	An act increasing the penalties for certain violations of the laws relative to hunting and fishing.
Chapter 501 —	An act providing for the transfer of certain land and buildings in the town of Westborough from the Department of Mental Health to the Division of Fisheries and Game.
Chapter 579 —	An act permitting fishing in Silver Lake in the towns of Pembroke, Halifax, Kingston and Plympton.
Chapter 612 —	An act relative to the injury and killing of fish and fish spawn in the inland waters of the Commonwealth and requiring remuneration for fish so injured or killed.
Chapter 732 —	An act providing aid to paraplegics while hunting.

GAME

GAME FARMS: The sexing of pheasants by the use of sex-linkage has greatly reduced labor, feed, pen space, etc.

Vandalism is still a major problem at two of our game farms. Several hundred valuable quail brood stock were stolen along with an undetermined number of pheasants. All possible efforts are being taken to remedy this situation.

FOREST PHEASANT PROJECT: This project is progressing well. However, some problems were encountered in mating of specific pheasant varieties. This past rearing season, over one thousand hybrid chicks were reared at the Ayer Game Farm.

Approximately 200 surplus adult brooders were released on selected areas in the Quabbin Reservation, Martha's Vineyard Island and southern Berkshire County. In 1971, almost all male breeding stock may be captured from these releases in the wild. Birds will be restocked on all previously-mentioned areas.

WOODCOCK PROJECT: During the springs of 1969 and 1970, the Division conducted a randomized, singing-ground survey on nineteen routes, established by the Migratory Bird Population Station. Division of Fisheries and Game, and Bureau of Sport Fisheries and Wildlife personnel participated. Eight management singing ground routes were censused.

During the periods July 7, 1969 through August 15, 1969 and June 15 through June 30, 1970 Division personnel concentrated their efforts on the location of summer fields. Previously known summer fields in the Quabbin Reservation and potential sites in Central Massachusetts were checked. One brood of three chicks, and three immature males and females were banded in the 1969 period. The immature birds were captured by night-lighting. During the period April 25 to June 30, 1970, seven broods of 21 chicks were banded by the use of bird dogs. The peak hatching date for Central Massachusetts appears to be May 10. One immature female was banded by night-lighting in June 1970. Inclement weather during the last part of June 1970 greatly hindered operations. No harvest data was collected during this reporting period.

Top: Canada geese are herded into a net as part of an operation aimed at establishing a breeding flock in western Massachusetts. Middle: Immature ringnecks roost along a rafter at one of the game farms. Bottom: Black ducks trapped by a cannon net wait to be banded.

MOURNING DOVE BANDING PROJECT: The objective of the mourning dove project is to increase knowledge on this species within the state as part of the Eastern Dove Management Unit.

During the period June 26, 1969 through September 15, 1969, a total of 1,934 mourning doves were trapped and banded at seven sites in Massachusetts. Despite an increase in effort in 1969, 167 fewer doves were trapped and banded. Banding schedules were completed and forwarded to the Migratory Bird Population Station, Laurel, Maryland.

Mourning doves banded in Massachusetts during this period were known to be harvested by hunting in the following states: Alabama, Georgia, Maine, North Carolina, South Carolina, and Virginia.

MOURNING DOVE CENSUS: Three mourning dove "coo-count" routes are surveyed annually in cooperation with the U. S. Fish and Wildlife Service. In 1970, the total number of calling doves heard on all three routes increased 300%.

STATEWIDE BEAVER HARVEST: As part of a move to conserve the state's furbearers, the 1969-70 beaver season was shortened to six weeks. The resulting harvest (605) was therefore considerably less than the 1,052 trapped the season before. Berkshire and Franklin Counties yielded more than half (323 beaver or 53.4%) of this season's harvest. Also 59.5% of the beaver trapped this season were taken in December. Conibear traps accounted for 397 beaver. Total harvest value, $13 per pelt, was $7,852.

WILD TURKEY RESTORATION STUDY: The fall, 1969 Massachusetts turkey population on seven release areas totaled 258 turkeys. There were 105 turkeys in the Quabbin-New Salem population (prior to trapping), 56 in the Barre-Oakham area, 54 in the October Mountain area (Becket-Washington-Middlefield), 30 in the Town of Washington, 17 in the Douglas State Forest, 6 in Myles Standish Forest, and 2 on the Holyoke Range. Late winter-spring population was 170 turkeys statewide.

Twelve turkeys were trapped by cannon net in New Salem between September and November. Seven birds were transported to Douglas Forest, and five to the Barre-Oakham area. A drop-door trap was used with limited success during the winter. Winter feeding was conducted from January to March 1970 for the Quabbin, Douglas, and October Mountain flocks in order to increase the overwintering population and to lure the turkeys to a central area to facilitate enumeration.

Visual roadside counts, track counts, and cooperator reports were used to determine the number of turkeys in individual populations. Snowmobiles were used with success during the winter.

CANADA GOOSE NESTING SUCCESS AND BROOD SURVIVAL: Nesting data were collected from the Sudbury and Framingham Reservoir systems. Twenty-six nests were started; 19 nests were successful, 5 nests were abandoned and 2 were destroyed by predators (raccoon, crow ?). Nesting success was 73.1 percent. Of 122 eggs in the nests that were successful, 104 eggs hatched, giving an 85.2 percent hatchability. Average clutch size (including a clutch of ten eggs and one of twelve eggs) was 6.8 eggs. Average clutch size was 5.6 eggs excluding ten and twelve egg clutches; six eggs was the mode for clutch size, the range being three to twelve eggs. By mid-April 62.5 percent of all nests were initiated. No new nests were started later than the first week of May. Twenty-six nests were found on the study areas in 1968 and 1969. There is no evidence that removal of goslings for transplanting has adversely affected the breeding population on the study areas, but may, in fact, be instrumental in holding the population at its present level, a desirable result in view of the nuisance complaints received in the vicinity of the study area in past years.

ESTABLISHMENT OF BREEDING FLOCKS AND FLOCK HOLDING TECHNIQUES — CANADA GOOSE: Five trapping operations netted twenty-four goslings and two adult Canada geese which were banded, aged, sexed, color marked, transported and released at three different sites. An additional two goslings, four yearlings, nine adults and one unknown were aged, sexed, banded and released at the trapping sites and nine returns and six foreign recoveries recorded.

A three-year summary of the data indicates a 21.9 percent recovery rate for transplanted geese.

GOSLING TRANSPLANT PROJECT: In conjunction with the gosling transplant study, a total of 50 Canada geese were drive trapped in five different sites in eastern Massachusetts. Thirty-nine geese were banded and of these, 27 were transplanted on three sites in Central and Western Massachusetts. The transplanted birds were color banded for easy recognition. Eight non-color banded geese were banded and transported from the Sandwich to the Ayer Game Farm.

The trapping also recovered five birds banded out of state and six repeats. Two geese trapped in Southboro and transported to Quabbin Reservoir last year were recaptured at Southboro this year. Birds banded last year were shot during the 1969 hunting season in Massachusetts, Connecticut and New Jersey.

PRESEASON BANDINGS: Preseason waterfowl bandings for 1969 began with wood duck nest trapping. Thirty-six wood ducks and one hooded merganser

GAME DISTRIBUTION	July 1, 1969 — June 30, 1970		
Pheasants	**Hens**	**Cocks**	**Total**
Adults:			
Spring and Summer liberations	1693	237	1930
Young:			
August liberations	0	13600	13600
October-November liberations	0	44721	44721
Sportsmen Club Rearing Program	0	5535	5535
TOTALS	1693	64093	65786
QUAIL			
Adults			950
Young			2686
TOTALS			3636
White Hare			
Northern Varying, purchased			2500

were banded. Twelve other hand-reared wood ducks were banded and released.

One hundred and sixty-five Canada geese were captured and banded by drive trapping in July.

An airboat fitted with night-lighting equipment was employed to band 200 mallards, 91 black ducks, 29 black X mallard hybrids, 143 wood ducks, 19 blue-winged teal, 54 green-winged teal, two gadwalls, one baldpate, one hooded merganser, 44 American coot, four common gallinules, four Virginia rails, 13 sora rails, and four pied-billed grebes.

WINTER BLACK DUCK BANDING: The Banding Committee of the Atlantic Waterfowl Council set the Massachusetts wintering black duck quota at 2,000 birds. The Massachusetts Division of Fisheries and Game banded 1,937 blacks, 132 black X mallard hybrids, 41 mallards, seven pintails, one green-winged teal and one canvasback. In addition, 40 birds, previously banded by other stations were recovered.

The birds were captured by the use of a cannon net in Boston Harbor area, while bait traps were used on sites at Buzzards Bay, Plymouth, Duxbury, Westport and on the mid-Cape.

In addition to the regular black duck trapping effort, a special bait trap with an underwater entrance was set up on Salt Pond in Falmouth to test the feasibility of trapping diving ducks. Thirty-seven canvasbacks, two red heads, and two hooded mergansers were banded. The program will be expanded next year.

WINTER INVENTORY FLIGHTS: Winter inventories were taken from chartered planes from October through January. Two crews were used, one flying the coast from the New Hampshire line to the Cape Cod Canal and the other patrolling the remainder of the coast including the Cape and Islands.

A total of 107,719 waterfowl were counted of which 17,942 were black ducks. The 1970 total was down 11% from 1969, blacks down 44%. Based on the ten-year average, total waterfowl were down 16% and blacks down 29%.

WOOD DUCK NESTING STUDY: Banding of wood ducks began in early April when incubating females were captured, banded and returned to the nest. Production on Great Meadow National Wildlife Refuge declined for the third year in a row with only 150 ducklings being produced from 13 nests. Juvenile recruitment was up from 1968 but far below that necessary for a stable population. Eleven successful nests on three other SUASCO Valley study areas produced 119 ducklings.

On ten central Massachusetts study areas there were 448 ducklings including nine hooded mergansers. This total is slightly higher than the 1968 production figures, although the number of successful nests for both years was the same.

WOOD DUCK POPULATION STUDY (EVALUATION OF STARLINGPROOF NEST BOXES): Thirteen nesting attempts by eight wood ducks and five mallards were made in 69 starlingproof nest boxes erected in 1970. Seven nests were successful (one mallard

Jim Cardoza, in charge of the turkey project, puts out corn for wintering turkeys. Below: Division waterfowl biologists evaluate starling-proof wood duck boxes.

Bob Bellville fastens a band to a mallard's leg as part of a winter program that resulted in the banding of 1,937 blacks, 132 black X mallard hybrids, 41 mallards, seven pintails, one green-winged teal and one canvasback.

and six wood ducks). There were no starling nests in any of the boxes, but there were reports of two grackle nests and several successful tree swallow nests.

DEER

Approximately 2,002 deer were taken during the 6-day shotgun season and 37 during the archery season for a total of 2.039. This figure represented an increase over the 1968 kill of 612 deer.

During the shotgun season 1,415 bucks and 587 does were checked. Ten males and 27 females comprised the archery kill.

Corresponding figures for the 1968 shotgun season had been 1,083 bucks and 310 does. For the 1968 archery season the breakdown had been 21 bucks. 13 does.

DETERMINATION OF THE REPRODUCTIVE RATE OF DEER IN MASSACHUSETTS: Eighty female deer carcasses were aged and examined during a five-month period — January 1, through May 31, 1970.

Corpora lutea counts were documented. The following reproductive rates were determined from a five-year summary (1966-1970) of reproductive data.

Age at Parturition	Sample Size	No. of Fawns Produced	**Reproductive rate**
Yearlings	104	23	100 does: 22 fawns
Two years	57	76	100 does: 133 fawns
Adults	111	193	100 does: 174 fawns

DETERMINATION OF THE DEER HUNTING PRESSURE IN MASSACHUSETTS: Based on 1,937 deer kill observations, it was determined that 66% of the successful hunters harvested a deer within 20 miles of their home town.

DETERMINATION OF THE REMOVAL RATE OF THE MASSACHUSETTS DEER HERD: During the two-week archery season (November 10 through November 22, 1969), archers reported taking 37 deer. It appears that the archers were selective as 27 males and only ten females were reported.

Director James M. Shepard issued the following number and types of anterless deer hunting permits: Sportsmen — 4,000; Special Nantucket — 400; and Landowner — 295; Permit holders harvested 601 deer including 494 does, 107 button bucks and 100 antlered males.

The success ratio of the 4,000 sportsmen permit holders was one to six. The holders of the 400 special-Nantucket permits and the 295 Landowner permits enjoyed a success ratio of one to five.

The top three counties in Massachusetts producing the bulk of the deer harvest were Berkshire (563), Franklin (424), and Worcester (284). These three counties provided 62% of the deer harvested during the 1969 season.

Massachusetts hunters took 71% of their deer on the first two days and last day of the regular season.

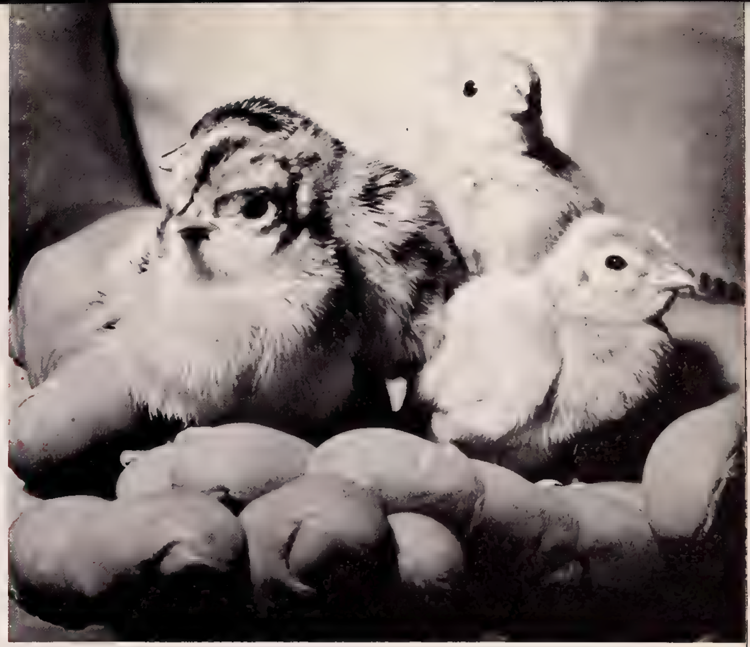
There were 682 deer mortalities reported by Natural Resource Officers during the calendar year of 1969. Three hundred and ninety-seven of these were killed by motor vehicles; 166 by dogs, 39 by poaching; 16 by drowning; six by trains; and five by fences. Two deer were killed for crop damage and 51 deaths were attributed to miscellaneous and unknown causes.

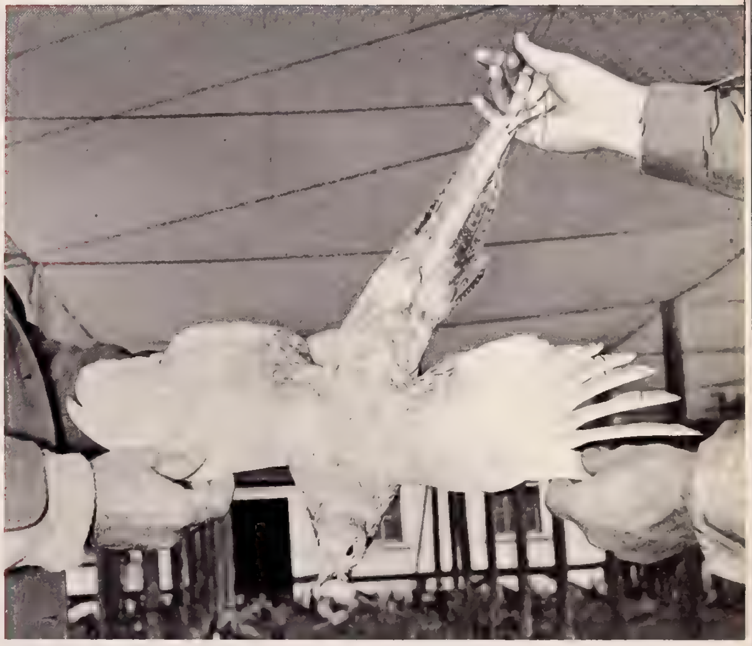
There was no evidence of disease or starvation during the period covered by this report.

DETERMINATION OF SIZE OF THE MASSACHUSETTS DEER HERD: The minimal herd size formula was revised to include fawn production of the yearling, two-year old, three-year old, and older age classes of female deer. The 1969 pre-shotgun season deer herd size was calculated to be 11,972 deer. The projected size of the 1970 pre-hunting season herd was estimated to be 16,344 deer.

Respectfully submitted,
Warren W. Blandin, Chief of Wildlife Research
E. Michael Pollack, Chief Game Biologist

Top: An important breakthrough in pheasant rearing has been the development of sex-linked color patterns allowing male and female chicks to be easily distinguished. Darker chicks on the left are males. Middle: When the female chicks mature they are almost white. Bottom: The Division hopes to develop a "forest pheasant" that can take over for the ringneck as Massachusetts returns to a forested condition.





MASSACHUSETTS COOPERATIVE WILDLIFE RESEARCH UNIT

Wood Duck: An intensive study of growth and survival rates of wood ducks fed on different levels of a protein diet is now underway.

Beaver: Some pioneer work is being conducted on the population and behavior of a colony of beaver in Quabbin Reservation.

Sparrow Hawk: A study is underway on homing, survival and other data pertaining to sparrow hawks. This small falcon is also being tested for effects of pesticides.

Black Duck: Field work continues on the behavior, dispersal and feeding habits of the wintering black duck in Nauset Marsh, Cape Cod. Crop samples and stomachs collected from Patuxent and elsewhere are being analyzed. Thorough descriptions of winter maritime black ducks remain unpublished.

Ruffed Grouse: Studies of habitat and feeding habits of ruffed grouse on Mt. Warner were continued.

Waterfowl Investigation on the Connecticut River: A thesis on the species of ducks using the river, and an estimate, by mail survey, of hunting pressure were completed.

Bobcat Study: An intensive study of bobcats on Prescott Peninsula is being conducted. Seven bobcats have been caught and instrumented with radio transmitters. More sophisticated telemetry equipment had been purchased during the year, and daily contact with a number of cats has been possible.

Canada Goose Project: A PhD candidate working on nesting behavior of Canada geese, completed another season at East Meadows Ranch near Delta, Manitoba.

DISTRICT MAINTENANCE OF WILDLIFE MANAGEMENT AREAS

WINNIMISSET MEADOWS:
Constructed three parking areas.
Arranged for and supervised cooperative agricultural-wildlife project with local farmers resulting in an agreement for annual planting and cultivation of field corn on 25 acres of which substantial blocks of standing corn will be left for wildlife and hunting cover.
Erected 2000 feet of fencing to keep livestock out.
Built ¼ mile of new road for access to interior areas.
Demolished, burned, buried and removed 5 buildings.
Filled cellar holes and graded and reseeded all areas where buildings had been removed.
Planned construction of wildlife pond and dam.
Cleared 12 acres for wildlife with bulldozer. Graded and seeded same.
Cleared 2 acres for wildlife with chainsaws.
Erected new signs designating area as Wildlife Management Area and posted all boundaries.
Planted several thousand fruiting and coniferous shrubs and trees.
BIRCH HILL:
Cleared 10 acres for wildlife and seeded same.
Cut and hauled timber to produce 50,000 board feet of lumber.
Reconstructed storage shed and poured concrete floor.
Built ¼ mile new access roads.
Maintained all existing roads, trails, signs, bridges, ramps, buildings and grounds.
Constructed two new boat access ramps on Millers River for small boat use.
FOUR CHIMNEYS:
Cleared land and constructed parking area.
Gravelled existing roads.
Brush-cut roadsides and fields in early stages of succession.
Constructed and erected all necessary signs.
SWIFT RIVER:
Demolished existing dwelling with bulldozer.
Constructed large parking area.
Constructed and erected signs as appropriate.
PERU:
Brushed three miles of road and one parking lot with tractor.
Constructed and erected 25 signs.
Marked three miles of boundary.
Brush-cut two acres.
KNIGHTVILLE:
Repaired five miles of road.
Constructed and erected 50 signs.
Marked one-half mile of boundary.
CONWAY:
Constructed and erected 30 signs.
Marked two miles of boundary.
CHESHIRE:
Planted 3,000 multiflora rose, 250 hetzi juniper, 500 highbush cranberry.
Constructed and erected 50 signs.
Marked two miles of boundary.
LENOX:
Band-cut one-half acre.
Brush-cut five acres.
Constructed and erected 20 signs.
Marked one mile of boundary.
BECKET:
Constructed and erected 15 signs.
Marked one mile of boundary.
CHESTER:
Capped one well.
MYLES STANDISH:
Maintained 11 miles of roads by limbing overhanging trees, brush-cutting roadsides, bulldozing and harrowing roadsides.
Constructed and erected 40 signs.
Planted 77 acres with annual grains.
Thinned and cleared 105 acres.
CRANE:
Painted and repaired two buildings.
Maintained 11 miles of roads by limbing overhanging trees, brush-cutting roadsides, bulldozing and harrowing roadsides.
Constructed and maintained eight acres of parking lots.
Constructed and erected 100 signs.
Planted 5,000 shrubs and trees.
Planted 20 acres with annual grains.
Top-dressed 20 acres of fields.
Thinned and cleared 107½ acres.
FREETOWN STATE FOREST:
Erected 20 signs.
ROCKY GUTTER:
Constructed and erected 30 signs.
CRANE POND:
Installed two culverts in road system; some grading, gravelling and top dressing.
Constructed one new lot including clearing of trees, brush, grading and gravelling.
Added gravel to existing two lots.
Boundary surveys were made and marked along 1,900 feet of boundary.
About 20 wooden signs for hunter control were erected at strategic locations throughout the area.

(continued on page 31)

INFORMATION AND EDUCATION

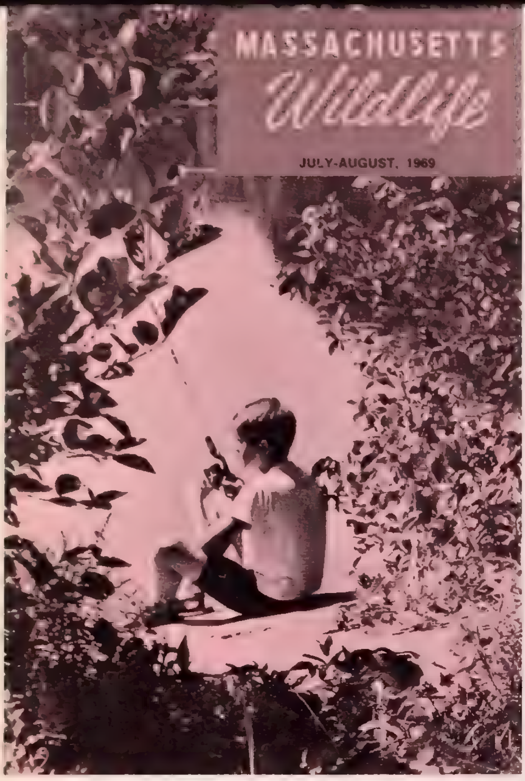
Central Wildlife District Manager Paul Mugford presents the first Friend of Wildlife Award to Stephen "Red" Skorupski, Proprietor of Skorupski Brothers' Fuel Oil and Service Station, Wilbraham, in recognition of his contribution of a heavy-duty culvert for use on a Wildlife Management Area. Below: Young fishermen enjoy themselves at the Massachusetts Junior Conservation Camp.

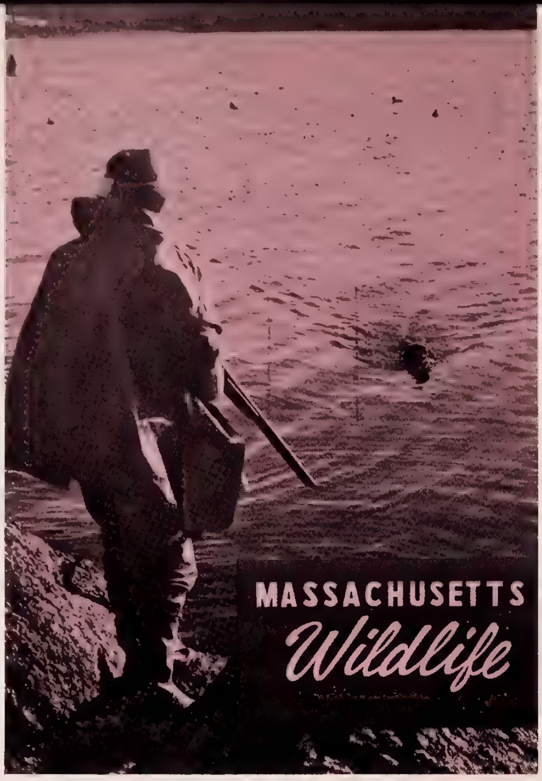
POPULATION pressure and accompanying desruction of our environment has pushed this Division nto a new role. So that we may continue to meet ur obligations to the citizens of Massachusetts, we ave found it necessary to meet the enemy before e meets us. A case in point is our present realty rogram. In addition to managing wildlife, we are ow obliged to rescue land from the clutches of "Progress" so that we will have the land to manage.

MASS. WILDLIFE HIGHLIGHTS

Massachusetts Wildlife, the Division's official magzine (circulation 45,000) is reflecting this overall olicy change and is presently laying the groundvork for a major expansion in editorial scope. unting, fishing and current Division programs still eceive adequate coverage but, if the magazine is o succeed, it must be more than a sporting pubcation. As a state conservation agency we have a esponsibility to both consumptive and non-conumptive users of wildlife resources. We offer the ublic a conservation magazine in the belief that ostering a sense of environmental responsibility s in the best interests of every citizen of the state. f the environmental quality of America is ever to e restored it will come about only through a uniersal effort by the American people.

It is the I and E Section's job to make the public ware that the sportsman's and civilization's inerests are presently indistinguishable and that both re inextricably bound to the land organism. In neeting this responsibility, our most valuable workng tool is the magazine.





MASSACHU
Wild
NOVEMBER-DECE

There is another important angle to be considered in the editorial expansion of **Massachusetts Wildlife.** Sportsmen all over this country are continually being painted as rapacious gluttons of wildlife resources whose single purpose is to kill. It is our conviction that they have been woefully undersold and that their interest in wildlife extends far beyond the particular species they happen to be pursuing. Indeed, if it had not been for the combined efforts of sportsmen, today's society would be without any meaningful conservation programs or legislation.

Understanding and appreciation of nature can turn an unproductive hunting or fishing trip into a rewarding adventure afield and transform a productive one into a meaningful ritual of renewal that reaffirms a man's age-old status in a functioning ecology.

Thus, if our magazine can instill in its non-sporting readers a genuine love and knowledge of nature and, at the same time, enlarge the sportsman's world, there are few programs this Division could sponsor that will pay greater long and short term dividends.

Tracing **Mass. Wildlife's** evolution through fiscal 1970, we first encounter Director Shepard's editorial in the July-August, 1969 issue. The following paragraph is particularly indicative of the shift.

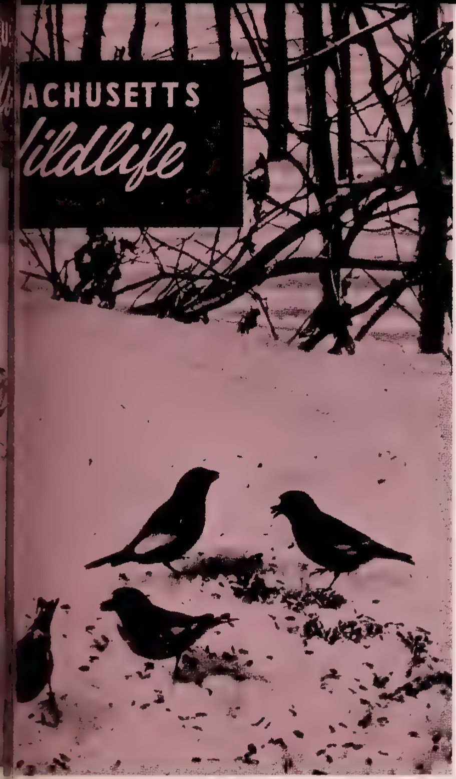
"I feel that this Division should play a greater part in improving the total environment in Massachusetts because that which is good for wildlife is good for man. This Division, through its magazine, will endeavor to educate the public to the dangers of our environmental problems. We are concerned with all forms of wildlife, not just game. We will be concerned with TE (total environment). We will encourage statewide talent working in various problems of our environment, to author articles in this publication."

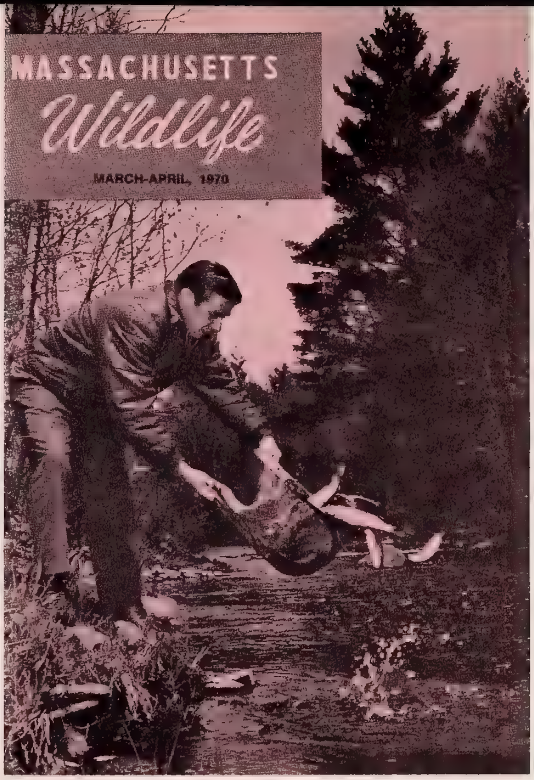
In the same issue the center spread — "Doves Tell All" — reports on the continuing banding study of doves (classified as songbirds in Massachusetts), carried on as a federal-aid research project under the auspices of the Pittman-Robertson Act, the Massachusetts Division of Fisheries and Game and the Massachusetts Audubon Society.

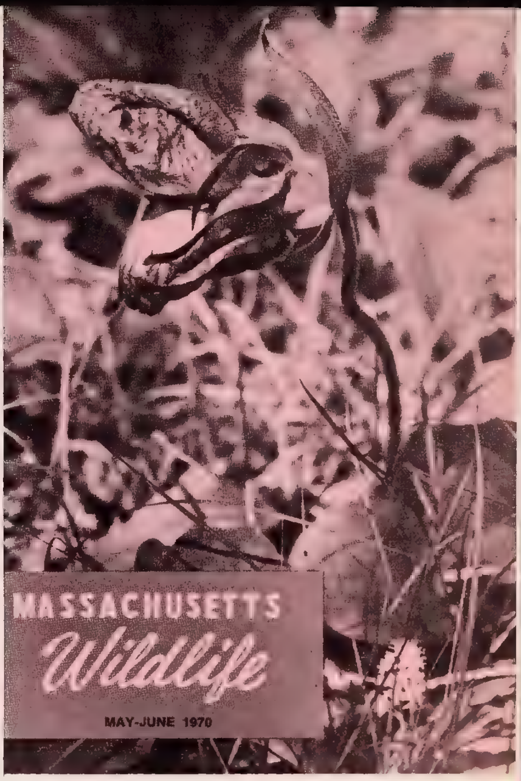
Dick Cronin's articles in the January-February issue is the next focal point. Dovekies — little penguin-like birds of the North Atlantic that are frequently driven inland by "nor-easters" — are hardly game birds, but the piece was well received, for the sportsmen's realm is all outdoors.

Freshwater turtles are interesting and, for the most part, an unfamiliar part of the sportsman's world. Whether hunting or fishing, he encounters them consistently. If he can identify a certain species when he sees it instead of shrugging it off as "just another turtle," his total outdoor experience will have been enriched and, even, if he draws a blank as far as game is concerned, he can never really go home empty-handed.

Terry E. Graham, a NASA Fellow affiliated with the Zoology Department at the University of Rhode Island, contributed "Sportsman's Guide to Massachusetts







Freshwater Turtles," a well-written piece with a separate write-up and illustration for each indigenous turtle. How many readers had been aware that their state played host to ten different species? And excluding the well-known "snapper" and "paint", how many of the remaining eight could they identify?

Finally, in the January-February, 1970 issue, an article by Aquatic Biologist Lee Lyman — "The First Big Step" — outlines the legislative measures Massachusetts has taken in controlling the use of hard pesticides. Lyman is presently supervising a pesticide monitoring program funded by the Massachusetts Health Research Institute, Inc. with a grant from the U. S. Department of the Interior's Federal Water Pollution Control Administration. The program is of vital interest not only to sportsmen, but to every resident of the state.

There were other points of interest in content, although not related to the trend discussed above. "Fall Fishing Across the Bay State" an excellent story (September-October) by Peter Marshall of Ashland was one example. A new kind of cover for the November-December issue featuring the painting "Contemplating Female Mallard" by Albert C. Barker, a Natural Resource Instructor at Essex Agricultural and Technical Institute in Hathorne, was another. The painting was the first piece of artwork to be used for a cover of **Mass. Wildlife.**

Director Shepard's editorial in the same issue discussed the antlerless permit system and outlined its dramatic effects on the growth of the herd. The issue also contained informative pieces on wild turkey, Bay State trapping, and trout propagation. This last story, by our top fish culturist, Bob Macomber, was reprinted in a national magazine.

Appearing on the last page of the November-December issue was a picture of a hapless Canada goose entwined in a plastic six-pack carrier. The picture was reprinted with due credit in four magazines.

YOUTH

Perhaps the most worthwhile program we have ever sponsored is the Massachusetts Junior Conservation Camp. The twenty-first session was held during the first two weeks in July with 139 boys completing the two-week course.

Sportsmens clubs led the list of sponsors with 33 clubs sending 76 boys. Other sponsors included garden clubs, high school fish and game clubs, county leagues, Kiwanis, Rotary, Grange, Parks and Recreation, women's clubs, and trust companies.

A course in firearms safety was offered by the DNR's Division of Law Enforcement. Training was also given in stream improvement, fly and spin casting, fly tying, small boat safety, rifle and shotgun shooting, basic camping, forest management and forestry practices, forest fire control, soil conservation, archery, fisheries, and wildlife management.

Arthur Silva, Director of the Massachusetts Junior Conservation Camp prepares to award trophies to the 1969 winners.

In the July-August issue of **Mass. Wildlife** local outdoor columnist Arnie Korenblum reported on the youth program sponsored by the Marlboro Fish and Game Association. The program, unmatched in any part of the country accommodates 100 boys. Its setup is very similar to the Massachusetts Junior Conservation Camp.

In his editorial appearing in the March-April, 1970 issue — "Take a Youngster Fishing" — Director Shepard examined the moral benefits imparted by a healthy life in the outdoors and pointed to hunting and fishing as means to an end. "What better place is there than a fishing trip to learn about oneself and Nature?" Shepard wrote.

NEWS RELEASES

Frequent news releases, some circulating to more than 2000 individuals and organizations, keep the public informed as to stories breaking in and outside the Division. Pertinent releases are issued not only by the I and E Section, but also by Wildlife District Personnel whenever developments within their geographic scope of operations require an open line to the public.

Occasionally, a story of major proportions breaks and more often than not the angle is human interest. By the end of fiscal 1970, phantom bears seemed to be emerging from the woodwork of the Westboro I and E office. Apart from the bear hearings and subsequent developments, which is a story in itself, Massachusetts bears were popping into the headlines all over the state. "Bruins in Trouble" — released October 28, 1969 — made it all the way to **Time.** The strange actions of two bears on a Florida, Mass. hillside had caused considerable speculation among onlookers. The general consensus was that the pair was on a "drunken toot." Dr. Streeter, a local veterinarian and sportsman, explained. "This is not uncommon in cows and bears. Bears gorge themselves on apples, regurgitate the pulp and retain the cider. Body heat then acts like a hillbilly still and alcohol is the by-product."

This incident, however, was just the beginning. On May 27, two hours after the first bear ever to be killed on a Massachusetts highway had met his demise on the Mass. Pike in the vicinity of Russell, another more fortunate bruin was struck by a car in Williamstown. Unimpressed by the entire proceedings, the durable animal glanced contemptuously over his shoulder at the startled driver and sauntered off into the woods.

A week later a Bay State bear was in the news again. Apparently driven by hunger, a fully grown but emaciated bear (80-lbs.) ambled into a populated section of Florida, Mass. After Natural Resource officers had drugged and moved the bear, it returned to civilization and attempted to break into a house. Fish and Game Biologist Jim McDonough rushed to the scene and found no other alternative than to destroy the animal with an overdose from his tranquillizer gun.

Apparently the cycle is beginning again for on October 28, 1970 the bears were right back where they started from — two of them, younger and rowdier than last year's team — on the same Florida hillside and, believe it or not, during the same week. This year, though, it doesn't look like alcohol was involved in either incident. It's only a guess, but at the moment the most plausible explanation seems to be that the bruins were tame and, in keeping with the times, had made the drug scene with a little unsolicited human assistance.

EXHIBITS

The Fish and Game exhibit at the 1970 New England Sportsman's show featured waterfowl for the first time in the Division's many years of participation. Live pairs of the following species were displayed in a 25-foot long pool: baldpate, American eider, Redhead, black, mallard, wood duck. There were two pairs of pintails, green-winged teal and blue-winged teal.

Ed Shaw, noted North Shore taxidermist, donated his labor in mounting a Canada goose, two male mallards and one male wood duck in life-like landing posture. This year's exhibit concentrated on aesthetics. Next year's will be aimed at education.

Throughout fiscal 1970 the Division also set up exhibits at the Topsfield Fair; the Norfolk County Conservation Commission's meeting; Zayre's Department Store Camping Show; the Mid-Cape Sportsmen's Club Show, Hyannis; the Gardner Show; the Agawam Show; and the Grafton State Hospital Show.

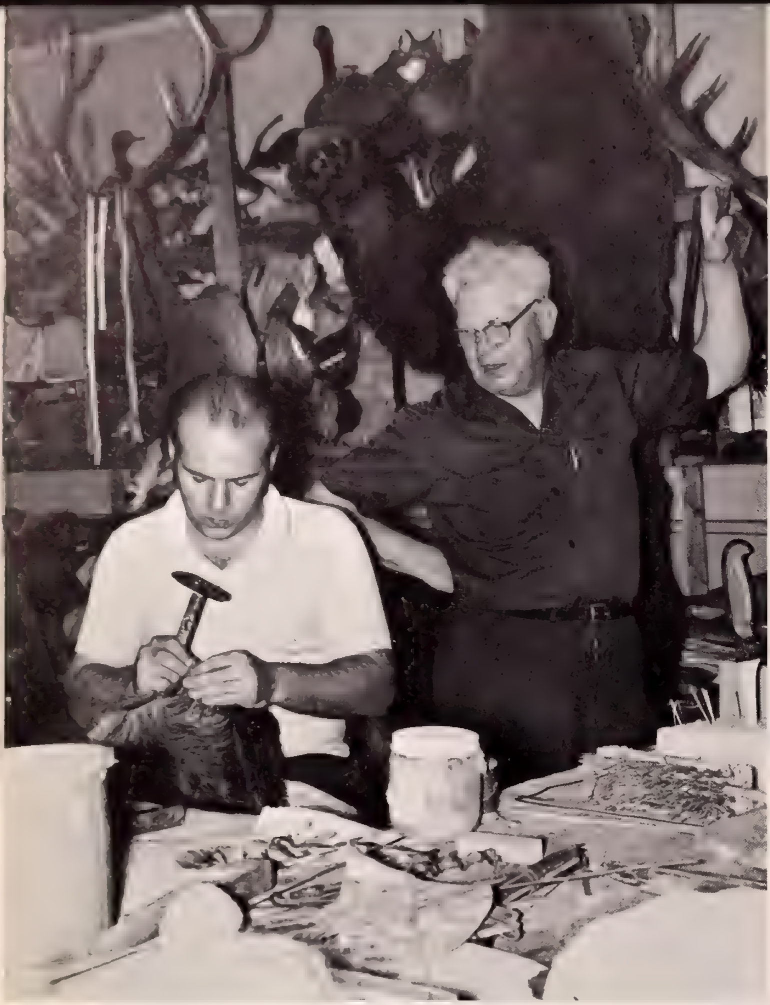
The Division also provided assistance, advice and equipment to a number of sportsmen's organizations interested in setting up exhibits. Included in these organizations were the Middlesex, Essex, Norfolk and Barnstable County Leagues of Sportsmen.

SPEAKING ENGAGEMENTS

In the Northeast and Central Wildlife Districts, 113 individual programs on Division activities were presented during the fiscal year — to sportsmen's clubs, leagues of sportsmen, Boy Scouts, Girl Scouts, Cub Scouts, Grange, school groups, garden clubs, 4H clubs and numerous other social organizations. Films and slide shows were frequently used to supplement talks.

Sportsmen all over this country are continually being painted as rapacious gluttons of wildlife resources whose single purpose is to kill. It is our conviction that they have been woefully undersold and that their interest in wildlife extends far beyond the particular species they happen to be pursuing.

Pictured on this page are non-game species of particular interest to sportsmen, which were featured in a recent issue of *Massachusetts Wildlife.* These remarkable shots were taken by John Swedberg, Field Editor for *World Wildlife Illustrated.* Above: A nesting goshawk launches a frontal attack on the intruding Swedberg. Below: A young screech owl plays peek-a-boo from a hollow tree.



Taxidermist Ed Shaw casts an appraising eye on assistant Burt Robbins as he tacks on the hide of a wild boar. Ed mounted specimens for our exhibit at the New England Sportsman's Show as well as our rapidy growing museum. Below: Live ducks paddle around an artificial pool — part of the Division's exhibit at the 1970 New England Sportsman's Show.

Total speaking engagements for the other two Districts were estimated at 110. The I and E Chief attended the usual routine meetings.

INFORMATIONAL MEETINGS

In the Central District, personnel hosted a winter meeting inviting the press, sportsmens clubs, educators, Scout leaders, and interested individuals. The meeting was intended to acquaint people with lesser known Division activities. Personnel and project leaders from Westboro were asked to detail their programs and projects. Despite one of the season's worst winter storms, 24 persons attended. Interest was keen and attendees expressed desire to make the event a semi-annual affair.

Central District personnel also met on several occasions with the owners of properties adjacent to Connors Pond, Petersham. In an effort to ensure fishermen usage of this pond and its source — the east branch of the Swift River — the Division coordinated its activities with the Petersham Gun Club. Meetings were held with landowners and special regulations were established permitting controlled use of the fishery. (Other District involvement at Connors Pond included trout stocking, development of access trails and parking areas, the erection of signs, and the seeding of the shoreline to improve the area for waterfowl.)

Also in the Central District, personnel participated in teaching efforts at the summer youth training school for Grange members, at various Boy Scout and Girl Scout training sessions and at Framingham State College.

CONSERVATION CLUB

The Division played a major role in assisting others to set up, organize and plan the programs for a young peoples' conservation club in Westboro. Goals were suggested and programs offered for the future.

MUSEUM

The Division's museum on the third floor of the Westboro Field Headquarters underwent a rapid expansion during the fiscal year. A few of the major contributions received include: 1. a fly display of wets, dries and streamers tied by former Fish and Game Director Horatio S. Dumont and contributed by his son John; 2. an antique salmon rod made by J. E. Tulip and donated by his son Jerry; and 3. a mounted snowy owl donated by Clarence E. Hinkley.

Finally, Ed Shaw — acknowledged above for his kind assistance in mounting specimens for our exhibit at the New England Sportsman's Show — has also volunteered to mount legally-harvestable shore birds in Massachusetts. When complete, the display will contain over 70 birds. The Division will be grateful for all legally-taken contributions. Birds will be accepted by Ed at his studio at 742 Broadway, U.S. Rt. 1, Everett.

Respectfully submitted,
Richard Cronin
Chief, Information and Educatio

continued from page 24)

Twenty-three Torengo crab apple trees and 20 Washngton Hawthorne trees were planted.

Permanently established fields were top-dressed with ime and fertilizer.

Four acres of Timothy were seeded and three and one-half acres of buckwheat and millet used.

Twelve acres were cleared with chain saws and rotary cutters.

Eight and a-half acres of brush and foliage were sprayed.

Five miles of roadside were either foliage sprayed or brush-cut.

DOWNFALL:

Approximately 10.25 miles of roads were maintained n some form. Culverts were installed where necessary and roads were top-dressed with additional gravel.

Boundary surveys were made and marked along 10,500 feet of boundary. Two-hundred metal boundary markers were used and 415 signs were erected throughout the area.

Almost 4,000 feet of trail were marked with various type signs. Thirty-five new wooden signs were constructed.

Twelve Torengo crab apple and 31 Washington Hawthorne trees were planted.

Thirty-two acres of permanently established fields were top-dressed with fertilizers.

Twenty acres of timothy were seeded and two acres of buckwheat, millet, canary grass mix was also planted.

About 15.5 acres were cleared by chain saw and rotary cutters.

Twelve and a half miles of roadside were brush-cut and/or foliage sprayed.

Twenty-five acres of stumps and 41 acres of brush were foliage sprayed.

A total of 247 nesting boxes were maintained and 34 were replaced. Replacement parts, covers and predator guards were also made.

About an acre of scattered water chestnut plants were sprayed on the Sudbury-Assabet River system using kerosene and 2, 4-D.

PANTRY BROOK:

Key boundaries were established and 20 signs erected.

FINANCIAL REPORT

JULY 1, 1969 TO JUNE 30, 1970

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Licenses		Price	Number	Gross Amount	Fees Retained by Town Clerk or City	Net Returned To State
Series No. 1	Res. Cit. Fishing	(5.25)	122,630	643,807.50	30,445.50	613,362.00
Series No. 2	Res. Cit. Hunting	(5.25)	56,439	296,304.75	14,000.75	282,304.00
Series No. 3	Res. Cit. Sporting	(8.25)	56,449	465,704.25	14,005.25	451,699.00
Series No. 4	Res. Cit. Minor Fishing	(3.25)	18,303	59,484.75	4,561.75	54,923.00
Series No. 4-A	Res. Cit. Female Fishing	(4.25)	24,097	102,412.25	5,983.00	96,429.25
Series No. 5	Res. Cit. Minor Trapping	(3.25)	199	646.75	49.50	597.25
Series No. 6	Trapping	(8.75)	652	5,705.00	161.25	5,543.75
Series No. 7	Non-Res. 7 day Fishing	(5.25)	2,184	11,466.00	542.25	10,923.75
Series No. 9	Non-Res. Fishing	(9.75)	3,078	30,010.50	761.50	29,249.00
Series No. 9-A	Alien Fishing	(9.75)	1,071	10,442.25	267.75	10,174.50
Series No. 10	Non-Res. or Alien Hunting	(16.25)	1,821	29,591.25	357.75	29,233.50
Series No. 12	Duplicate Licenses	(.50)	2,958	1,479.00	—	1,479.00
Series No. 15	Res. Cit. Sporting	(Free)	16,688	—	—	—
Series No. 17	Res. Cit. (Old Age Asst.) Paraplegic and to the Blind	(Free)	1,419	—	—	—
Series No. 18	Military or Naval	(Free)	5,882	—	—	—
			313,870	1,657,054.25	71,136.25	1,585,918.00
			Refunds			37.75
						$1,585,880.25

[illegible] SPORTSMEN'S DOLLAR WAS SPENT

[illegible]				
[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	946.57	$111,611.62	4%
[illegible]	[illegible]		101,634.24	3%
[illegible]				
[illegible]	[illegible]		167,372.87	16%
[illegible]	[illegible]	158,859.69		
[illegible]	[illegible]	50,787.67		
[illegible] Management	[illegible]	120,443.97		
[illegible]	[illegible]	10,000.00		
[illegible]	[illegible]	23,856.60	363,947.93	12%
[illegible] PROGRAMS	1070-2400		284,283.61	9%
[illegible]	1070-2400	120,443.98		
[illegible] Wild [illegible]	1070-2451	11,105.27		
Wildlife Research [illegible]	1070-2441	8,365.71		
Wildlife Research Restoration	1070-2461	202,141.67		
[illegible] Dove Management	1070-2502	3,500.00	345,556.63	11%
ENGINEERING AND CONSTRUCTION				
Repairs to Field Headquarters	1070-0093	14,160.00		
Construction and Improvements, East Sandwich	1070-2304	10,111.45		
Design Plans for Fish Screens	1070-2310	25,000.00	49,271.45	2%
LAND ACQUISITION				
Acquisition of Land & Waters for Fish & Wildlife Management Purposes	1070-2204	50,000.00		
Land & Waters for Fish & Wildlife Management Purposes	1070-9012	76,003.40		
Land & Water Acquisition & Development	1070-9013	401,705.04	527,708.44	18%
DEPT. NATURAL RESOURCES				
Supervision Public Hunting & Fishing Grounds	1020-0200	12,607.20		
Natural Resources Officers - Salaries & Expenses	1020-0000	199,186.19		
Office of the Commissioner	1000-0000 (a)	112,206.82	324,000.21	11%
[illegible] (Planned to be restored to Inland Fish & Game Fund)				
GROUP INSURANCE			37,785.95	1%
BOARD OF RETIREMENT (Two Years)				
Pensions			78,000.00	3%
MATURING SERIAL BONDS			200,000.00	7%
INTEREST ON DEBT SERVICE ON BOND			83,600.00	3%
			$2,977,775.95	100%

[illegible] Continuing Appropriations
[illegible] Reimbursable Federal Funds
[illegible] Reimbursable Federal Funds
[illegible] Reimbursable Federal Funds

APPROPRIATIONS & EXPENDITURES

Account No. & Title		Appropriation	Expenditures & Liabilities	Reverted
[illegible]	Administration	$ 218,409.00	$ 216,248.86	$ 2,160.14
[illegible]	Repairs to Field Headquarters Bldg.	20,000.00	14,160.00	5,840.00
[illegible]	Acquisition of Land and Waters	50,000.00	50,000.00	—
[illegible]	Fisheries Management	627,216.00	626,232.56	983.44
[illegible]	Design Plans for Fish Screens	25,000.00	25,000.00	—
[illegible]	[illegible] Anadromous Fish Project	25,000.00	23,856.60	1,143.40
[illegible]	Fish Restoration Project	51,115.00	50,787.67	327.33
[illegible]	Wildlife Management	534,675.00	525,171.56	9,503.44
[illegible]	Wildlife Restoration	204,820.00	202,141.67	2,678.33
[illegible]	[illegible] Dove Management	3,500.00	3,500.00	—
		$1,759,735.00	$1,737,098.92	$22,636.08

		Continuing Appropriations	Expenditures	Balance Forward
[illegible]	Construction & Improvements, Trout Hatchery, E. Sandwich	47,163.28	10,111.45	37,051.83
[illegible]	Damage by Wild Deer and Moose	13,369.88	11,105.27	2,264.61
1070-9011	Construction Quabbin Fish Hatchery	38.46	—	38.46
1070-9012	Land & Waters for Fish & Wildlife Management Purposes	108,304.50	76,003.40	32,301.10
1070-9013	Land & Water Acquisition and Development	1,000,000.00	401,705.04	598,294.96
		$1,168,876.12	$498,925.16	$669,950.96

** 50% Reimbursed Federal Funds
*** 75% Reimbursed Federal Funds
**** 100% Reimbursed Federal Funds

SUMMARY OF FISH AND GAME INCOME

Fishing, Hunting and Trapping Licenses	$1,585,880.25*
Special Licenses, Trap Registrations and Tags	7,240.60**
Archery Stamps	4,373.95
Rents	4,488.25
Miscellaneous and Sales	35,323.64
Court Fines	13,142.50
Refunds Prior Year	2,882.17
Pittman-Robertson Federal Aid	104,732.87
Dingell-Johnson Federal Aid	68,537.79
Anadromous Fish Projects Federal Aid	7,560.59
Mass. Mourning Dove Reimbursement	3,500.00
	$1,837,662.61

*See Receipts from Fishing, Hunting, and Trapping Licenses.

* *See Analysis of Special Licenses.

TRANSFERS TO INLAND FISHERIES AND GAME FUND

Interest on Investments	$ 23,090.92
Gasoline Tax Apportionment	249,591
Surplus in Inland Fisheries & Game Fund as of June 30, 1970	$431,948.48

ANALYSIS OF SPECIAL LICENSES

Type of License		Number Issued	Receipts
TRAP REGISTRATIONS:			
	Initial	112	$ 112.00
	Renewal	278	278.00
	Duplicate	1	.50
FUR BUYERS:			
	Resident	24	240.00
	Non-Resident	3	60.00
TAXIDERMIST:			
PROPAGATORS:	(Special Fish)	82	410.00
	Initial	23	115.00
	Renewal	178	531.00
	(Fish)		
	Initial	14	70.00
	Renewal	80	240.00
	(Birds & Mammals)		
	Initial	102	510.00
	Renewal	391	1,173.00
	(Dealers)		
	Initial	6	30.00
	Renewal	80	240.00
	Additional	534	534.00
	(Indiv. Bird or Mammal)		
	Initial	38	38.00
	Renewal	76	38.00
SHINERS FOR BAIT:	(1 duplicate)	159	795.50
FIELD TRAIL LICENSES:		3	30.00
QUAIL FOR TRAINING DOGS:			
	Initial	37	185.00
	Renewal	58	171.00
COMMERCIAL SHOOTING PRESERVES:		12	600.00
TRAPPING OF CERTAIN BIRDS;		3	15.00
MOUNTING PERMITS:		15	15.00
SPECIAL FIELD TRIAL PERMITS:		30	300.00
TAGS:			
	Game	5,172	
	Fish	22,000	
	Commercial Shooting	500	503.60
			$7,240.60

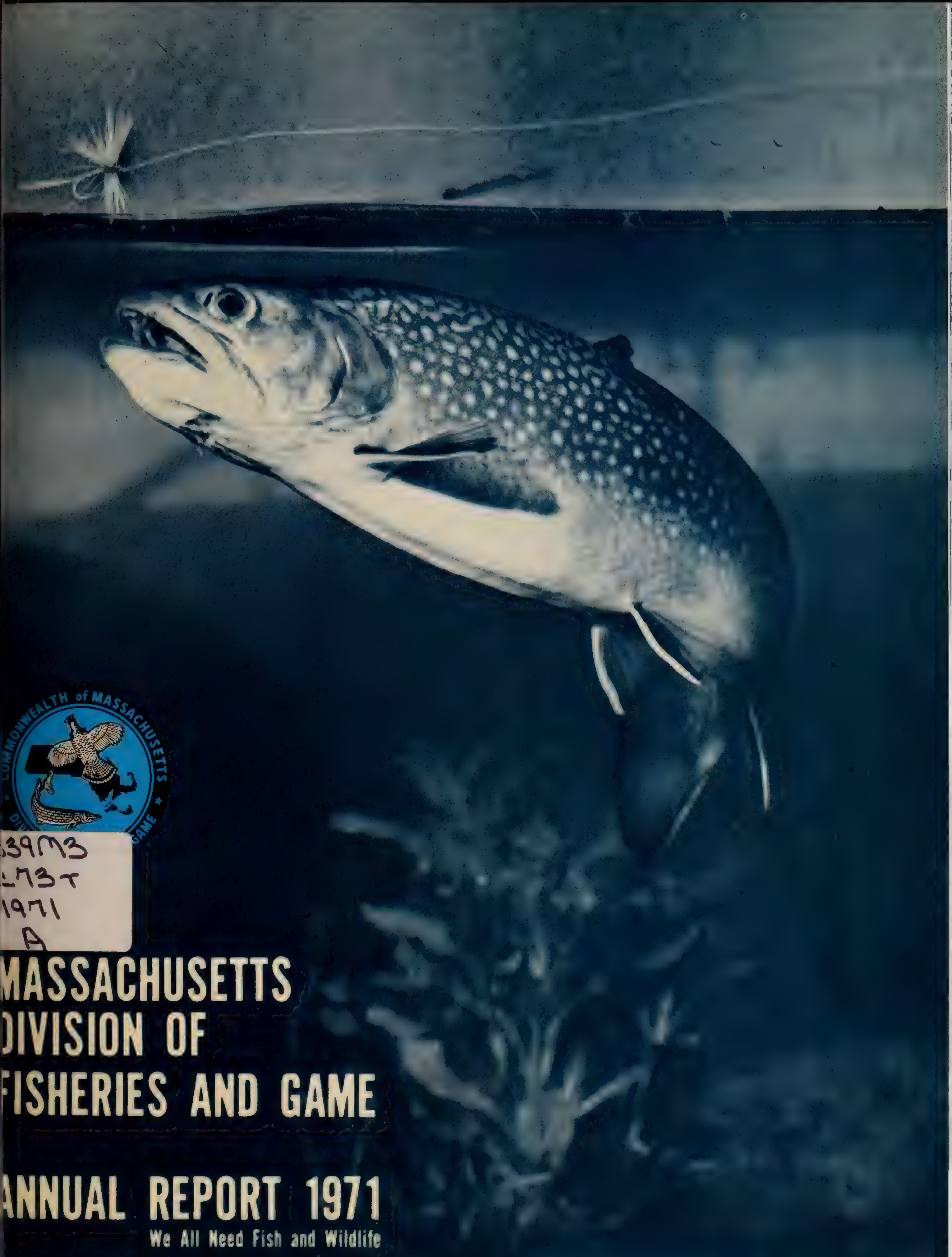
STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS

THRU JUNE 30, 1970

Species	*Weight*	*Length*	*Girth*	*Place Caught*	*How Caught*	*Date*	*Caught by*
Largemouth Bass	12 lbs. 1 oz.	25¾″	21¾″	Palmer River, Rehoboth	bait casting	5-9-63	George Pastick, Fall River
Smallmouth Bass	6 lbs. 12 oz.	21″		Pleasant Lake, Harwich	spinning	5-14-67	Thomas Paradise, Arlington
Northern Pike	24 lbs. 8 oz.	45½″	22″	Onota Lake, Pittsfield	live bait	1-13-67	Kris Ginthwain, Pittsfield
Pickerel	9 lbs. 5 oz.	29½″		Pontoosuc Lk., Lanesboro		- -54	Mrs. James Martin, Stockbridge
Rainbow Trout	8 lbs. 4 oz.	26″	16″	Deep Pond, Falmouth	live bait	10-15-66	Roger Walker, Eastondale
Brown Trout	19 lbs. 10 oz.	31½″	22⅝″	Wachusett Res., Boylston	spinning	5-19-66	Dana DeBlois, Sterling
Lake Trout	13 lbs. 1 oz.	31″		Quabbin Res., Pelham	trolling	9-13-63	LeeRoy DeHoff, Suffield, Conn.
Shad	8 lbs. 4 oz.	26″	19″	Palmer River, Rehoboth	fly casting	5-14-70	Warren L. Taylor, Warren
Channel Catfish	13 lbs. 8 oz.	30″	19″	Conn. Riv., Turners Falls	live bait	7-18-64	Robert Thibodo, Northampton
Walleye	9 lbs. 3 oz.			Assawompsett Pond, Lakeville	bait casting		William Spaulding, Whitman
Bluegill	1 lb.	11¼″	9½″	Bog Pond, Norton	spinning	10-17-65	Robert Barrett, Stoughton
Bullhead	5 lbs. 9 oz.	22½″	11½″	Conn. Riv., Hadley	live bait	6-8-63	Mrs. Erna Storie, Chicopee Falls
	5 lbs. 8 oz.	22½″	14″	Leverett Pd., Leverett	live bait	8-2-65	Stephen Brozo, No. Amherst
	4 lbs. 9 oz.	22½″	11½″	Conn. Riv., Chicopee	live bait	9-8-65	Joseph Kida, Chicopee
Calico	2 lbs. 9½ oz.	18″	14″	Merrimack, Lowell	spinning	6-8-65	George Olsson, Lowell
White Perch	2 lbs. 4 oz.	16¾″	11¾″	Halfway Pd., Plymouth	spinning	6-9-65	Richard Rock, Kingston
	2 lbs.	16¾″	11¼″	Halfway Pd., Plymouth	spinning	6-18-66	Richard Rock, Kingston
Yellow Perch	2 lbs. 5 oz.	17¾″	12″	Wachusett Res., Boylston	spinning	4-23-70	Arnold Korenblum, Marlboro
Brook Trout	6 lbs. 4 oz.	24″	14″	Otis Reservoir, Otis	spinning	6-24-68	Thomas Laptew, Granville

Division of
FISHERIES and GAME
Field Headquarters
WESTBORO, MASS. 01581

Second Class
POSTAGE PAID
at Worcester, Mass.



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MASSACHUSETTS DIVISION OF FISHERIES AND GAME

ANNUAL REPORT 1971

We All Need Fish and Wildlife

GOVERNOR
FRANCIS W. SARGENT

Director
JAMES M. SHEPARD

DIVISION OF FISHERIES AND GAME

Board

ROGER D. WILLIAMS, Chairman
Sudbury

BRADLEE E. GAGE, Secretary
Amherst

HARRY C. DARLING,
East Bridgewater

KENNETH F. BURNS
Shrewsbury

MARTIN H. BURNS
Newbury

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Director

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Asst. Director

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Superintendent

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Chief Game Biologist

WARREN W. BLANDIN
Chief of Wildlife Research

LOUIS H. CARUFEL
Chief Aquatic Biologist

RALPH R. BITZER
Chief Fish Culturist

RICHARD CRONIN
Chief Information and Education

JOSEPH JOHNSON
Chief of Realty

District Wildlife Managers

Western District
EUGENE D. MORAN

Central District
PAUL S. MUGFORD

Northeastern District
WALTER HOYT

Southeastern District
LEWIS C. SCHLOTTERBECK

COMMONWEALTH OF MASSACHUSETTS

Division of Fisheries and Game
106th Annual Report

His Excellency, Francis W. Sargent, Governor of the Commonwealth, the Executive Council, the General Court, and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and Sixth Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1970 to June 30, 1971.

James M. Shepard, Director

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WE ALL NEED FISH AND WILDLIFE: Focus of the 1971 annual report

EVERY addition to the fast-growing Endangered List bears this special warning--"the environment that supports you and every other life form on earth is having trouble supporting one more species." The emergency is not one to be left just to conservationists for it affects every inhabitant of earth. The loss of a species is an awesome tragedy, but at last we are beginning to see that tragedy, not as an isolated event, but as symptom of a much larger tragedy--the slow decay of earth's environment.

This recent perception imparts an importance to wildlife much more than aesthetic or even economic. The condition of wildlife mirrors our chances for survival. Half a century of wildlife management has demonstrated beyond all doubt that the ONLY way to maintain and restore wildlife on any permanent basis is to maintain and improve the environment that supports it. We live in that environment too, and if enough of us can learn to see wildlife as the "canary in the coal mine" and respond swiftly and intelligently to its warnings, man may yet live to be an old species.

THE COVERS: 1. An eastern brook trout rises to a well-placed dry fly. The voracious "brookie," now the only naturally occurring salmonid in Massachusetts, is technically not a trout but a char - a descendant of arctic char landlocked by ancient glaciers; 2. Now in the final hours of incubation, this hen ruffed grouse is reluctant to flush from her nest despite intruding photographer. (Photos by Jack Swedberg).

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2M-7-72-051939 Estimated Cost Per Copy: $.65

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The Board Reports

Legislation

ALTHOUGH the "Permanent Protection Wetlands Bill" has not yet passed, an all-out effort by many personnel on almost all levels has done much to ensure its passage next year. This is perhaps the most important piece of legislation ever introduced on behalf of fish and wildlife in Massachusetts.

We are especially pleased with the new amended version of Section 42 of Chapter 131. The original law forbade the discharge of wastes that pose any threat whatsoever to the inland fishery. In addition to the discharge of wastes the amended version forbids manipulation or alteration of flows or water levels to the extent that directly or indirectly injures or kills the fish or fish spawn therein. The fine--twice the value of the fish lost--goes to the Fish and Game Division.

Personnel

In October of 1970 the Board welcomed back an old friend--Roger Williams--who, upon moving back to Massachusetts from Connecticut, was appointed by Governor Francis W. Sargent to the Board and elected by the members as Chairman--a position he had held from May of 1961 to April of 1965.

In May of 1971 a testimonial dinner was held for Russell A. Cookingham, former Assistant Director of this agency and now Director of the New Jersey Fish and Game Division. Cookingham left a lasting mark with his development of Division programs in the Southeast Wildlife District and his demonstrated ability in administration in such areas as work on the Access Board, recodification of Fish and Game laws, and budget. He will be missed greatly by all who had the privilege to work with him. The Board and Division employees wish Russ the best of luck in his challenging new duty as New Jersey Fish and Game Director.

Hearings

The Board was encouraged by the large turnout of waterfowlers at our first meeting in Gardner Auditorium at the Boston State House. The facilities in the auditorium proved to be ideal and we hope, for the convenience of waterfowlers, that future hearings can also be held there.

Board members pictured above are: Top row, left to right--Roger D. Williams, Chairman; Bradlee E. Gage, Secretary. Bottom row, left to right--Martin H. Burns, Kenneth F. Burns, Harry C. Darling.

At a testimonial dinner held in his honor retiring Chief Fish Culturist, Ralph Bitzer, receives a gold watch from Fish and Game Director James M. Shepard. The watch was a gift from Division employees in appreciation of Bitzer's 53 years of dedicated service. (Mrs. Bitzer on right.)

As a result of a hearing in Berkshire County the Board voted to protect black bear, cutting the season from year-round to one week--the third Monday in November to the following Saturday. All bear hunters must have a special permit, harvest only bear with shotgun only, and, if successful, check the bear in at an official Fish and Game station for tagging and biological study.

The Board conducted one of its more interesting official meeting-hearings in a unique atmosphere at the Wahconah Regional High School in Dalton as guests of the student Rod and Gun Club. The subject considered was the protection of bobcat, red and gray fox. The Division's Board and staff, together with school officials and local conservationists, enjoyed a luncheon prepared by Wahconah's home economics section. The experimental meeting came in response to Governor Sargent's suggestion that state agencies bring government to the people.

Deer

The once controversial antlerless deer permit system has proved successful. We are most pleased with the program's progress and the widespread support of Massachusetts sportsmen.

This year's deer harvest was up 16 percent which is testimony enough to the program's effect on the size of the herd. The professional staff of the Division is to be congratulated for a first-rate job.

Quabbin

The Quabbin Reservoir continues to shine as one of New England's top warm and coldwater fisheries. The first reported spawning run of landlocked salmon late in the fall was encouraging.

Creel census work continues to document the value of this cooperative program between the MDC, the Fish and Game Division and fishermen. Hopefully our aquatic biologists along with MDC experts can find an acceptable solution to the overabundance of smelt.

Land

The Division's realty program continues to be one of this agency's best investments of the sportsman's money, a LONG-TERM investment whose returns will be realized by present generations and generations yet unborn.

An exchange between the Division and General Electric of 63 acres for a 15-acre easement and the sale to the Division of another 44 acres for $1000 were important building blocks in the Lee-Lenox Housatonic River area.

The Division is putting together a report on the land acquisition program, detailing where the sportsman's dollar has been spent. By the time of our next annual report the booklet should be available to the public.

Inter-agency Cooperation

Cooperation between this Division and fish and game agencies in other states has increased in recent years. One notable example of this cooperation occurred in February with the liming of 327-acre Wallum Lake in Douglas. Rhode Island and Massachusetts, whose border is bisected by the lake, applied 350 tons of lime, thus reducing the acidity of the water and increasing the productivity for coldwater species. Both states have had cooperative trout stocking programs in Wallum since the original cooperative reclamation.

Anti-hunting Sentiment

We are becoming increasingly alarmed at the growing anti-hunting hysteria presently sweeping the country. Director Shepard and the International Association of Game, Fish and Conservation Commissioners are to be applauded for their solid stance in the defense of hunting as a sport.

Field Headquarters

In last year's report we commented on the fact that the Division had outgrown its present Field Headquarters. We also pointed out that a large tract of land with two buildings on it was given to the Division by the Westboro State Hospital. It was recommended by the Bureau of Buildings that the structures be destroyed and new buildings erected in their place.

This past year bids were put out for the removal of the buildings and material. The site, overlooking Lake Chauncey, is an ideal location for the new Field Headquarters.

The Board would like to take this opportunity to thank all those who make this agency function--a dedicated staff, the Governor and legislature, the media, town, county, state and Federal agencies, and a dedicated following of sportsmen.

Respectfully submitted,
Roger D. Williams, Chairman
Bradlee E. Gage, Secretary
Harry C. Darling
Kenneth F. Burns
Martin H. Burns

FISHERIES

photo by Werner Meinel

DURING the 1971 fiscal year, fisheries research and management programs continued in the general areas of anadromous fish, coldwater fish, and warmwater fish studies, development activities and special study projects on pesticides and the Northfield Mountain pumped storage project.

Anadromous Fish Restoration

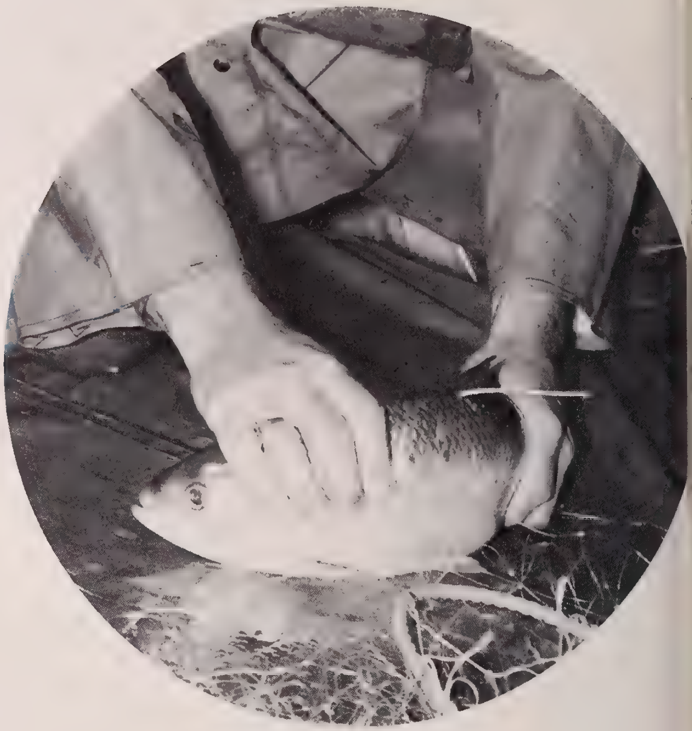
The Connecticut River continued to serve as the focal point for Massachusetts anadromous fish efforts. The program on the Connecticut is a coordinated endeavor involving the four basin states--Massachusetts, Connecticut, New Hampshire and Vermont--as well as two Federal agencies, the Bureau of Sport Fisheries and Wildlife and National Marine Fisheries Service. The coordinated program is premised on extending American shad to the limits of their historic range, Bellows Falls, Vermont, and restoring a run of Atlantic salmon.

In accomplishing these objectives shad population, behavior, and utilization studies have been in progress in Massachusetts. Creel census indicates that the shad is an important sport fishing resource at Holyoke with 17,558 anglers catching 14,522 shad during the spring run.

Shad behavior studies, using conventional and ultrasonic tags, show interesting results on fish movements in the river. Shad movements have been determined in the Turners Falls Canal and from below the Northfield Mountain pumped storage project tailrace upstream to Vernon, Vermont. Other migratory behavior and potential delay at the Holyoke dam was evaluated by tagging 1,223 adult shad below Holyoke. During the past four years 4,756 shad have been tagged.

A plant of 24,380 Atlantic salmon smolt was made in the spring of 1971 by the four states and Federal fishery agencies. Four tags from fish stocked in 1970 were returned from the Bay of Fundy, Nova Scotia. Such data further substantiated suitability of the lower 84 miles of the Connecticut River for seaward migrating Atlantic salmon smolts. The Palmer Hatchery produced 4,450 Atlantic salmon smolts for the Connecticut River program.

In any anadromous fish restoration program fish passage problems at major barriers must be resolved. To this end the four basin states with



A Connecticut River shad is tagged as part of a coordinated program aimed at extending the species to the limits of its historic range, Bellows Falls, Vermont.

assistance of their respective Attorneys General petitioned the Federal Power Commission in January 1971 to hold a formal hearing on fish passage problems which existed at Holyoke, Turners Falls, Vernon, Bellows Falls and Wilder dams. In May of 1971, the Holyoke Water Power Company reversed its position and indicated willingness to fund and negotiate for expanded fish passage facilities at the Holyoke dam which opened the way toward initial meetings.

Two other anadromous fish projects, dependent to a large degree on the Connecticut River shad run for fertilized eggs, were continued in 1971. For both projects 3.5 million shad eggs were stripped and fertilized in egg-taking operations on the Connecticut River.

The southeastern Massachusetts shad study was designed to determine feasibility of restoring shad to streams through plants of fertilized eggs and transfer of adults, in addition to obtaining information on the existing fishery. Approximately 300,000 fertilized shad eggs were stocked in the Agawam River below Halfway Pond and 54 adult shad consisting of 33 males and 21 females were netted in the North River, transported and stocked in the Mattapoisett River, Rochester. Creel census on the Palmer River indicated 1,208 anglers and a catch of 351 shad. The North River produced 456 shad for 2,298 anglers and yielded a new state record for American shad of 8-½ pounds.

The Merrimack River anadromous fish project, a cooperative venture between Massachusetts and New Hampshire continued with low-level activity in the Massachusetts portion. Fertilized shad egg plants were concentrated in the New Hampshire section.

The Division also provided assistance to the Division of Marine Fisheries in rearing coho salmon at the Palmer Hatchery. Fertilized shad eggs were jointly obtained and stocked by the Division of Marine Fisheries in the Nemasket and Charles Rivers.

Coldwater Fish Investigations

The trout and salmon hatching and rearing program continues to provide the basis for the coldwater fisheries program. Several coldwater fisheries investigation projects are in progress for the purpose of evaluating utilization and management of the hatchery product.

The eighteenth year of continuous management evaluation at Quabbin Reservoir indicated that from April through October 60,231 anglers harvested 70,939 fish weighing 53,293 pounds. The number of anglers increased 16 percent over the previous year, while the number and pounds of fish harvested by anglers increased 30 to 27 percent, respectively. Total harvest of salmonids increased 5.6 percent over 1969 levels. The harvest of landlocked salmon increased to 887 fish, lake trout to 1,454, and rainbow trout to 4,424.

The smelt population continued to expand and the biological impact as a forage fish was evident in increased average condition factor (W=KL3) on both landlocked salmon (0.86) and lake trout (0.97). The 1971 spring smelt run expanded into 15 tributaries; as a result Division personnel destroyed partial egg masses in nine tributaries. No treatment was carried out on six streams. (This constituted a net gain in smelt production of two streams since smelt were present in only four tributaries in 1969.) Partial control was deemed necessary due to smelt clogging screens, chlorinator, and generator in the water distribution system during the summer of 1970. The screening study by Camp, Dresser & McKee was completed with plans and specifications for the Winsor Dam outlet. Additional problems in the Wachusett aqueduct were encountered so before screen installation feasibility can be determined more study will be required.

Salmonid stocking in the reservoir was increased to exert biological control on the expanding smelt population. Some 36,200 catchable rainbow trout, 27,000 spring yearling landlocked salmon, and 66,500 lake trout fingerlings were stocked. All of the lake trout and 12,500 landlocked salmon had been hatched and reared at the Palmer Hatchery.

The second year of study on Littleville Reservoir was completed. Creel census indicated 12,966 anglers harvested 9,347 trout weighing 5,232 pounds and 1,301 warmwater fish weighing 253 pounds. Fishing pressure on this 275-acre reservoir amounted to 165 hours of angling per acre and a harvest of 20 pounds of fish per acre. With the warmwater fish population re-established, reclaimed trout pond status was terminated. Future plans are to manage Littleville as a two-story fishery.

In August 1970, a temperature profile and vertical distribution of dissolved oxygen was determined for 43 ponds. Thirteen ponds contained a percentage volume of trout water (70° F. or less temperature and containing 5 ppm of dissolved oxygen).

Trout-forage-fish relationships involving sea-run alewives in Higgins and Hathaway Ponds entered the third year of study. The objective of this project is to determine if reproduction from sea-run alewives stocked in trout ponds serves to increase condition factor and growth of rainbow trout. Four years are required to complete the study with rainbow trout after which the project is to be replicated using brown trout.

In an effort to provide additional angling opportunity for coldwater species and endeavor to establish kokanee salmon in Onota Lake, 94,200 fingerlings reared at the Palmer Hatchery were stocked. During the year three kokanee salmon up to 11 inches in length were caught by anglers. Fall fish sampling only yielded one kokanee. Preliminary indications are that inter-specific competition caused by the smelt population may prove to be the limiting factor in establishing any significant kokanee salmon fishery in Onota Lake.

To determine coldwater fish potential in streams where this capability is largely unknown or may have changed, the Housatonic River drainage

Massachusetts Trout Distribution from State and Federal Hatcheries

	Brook Trout	Brown Trout	Rainbow Trout	Total
State	138,500	116,790	722,179	977,469
Federal	75,000	45,000	9,554	129,554
				1,107,023

Total trout distributed	6"-9"	303,015
Total trout distributed	9" plus	674,464
Total Federal trout	6" plus	129,544
Total catchables	6" plus	1,107,023
Total fingerlings	6" minus	324,194

Hatchery Poundage

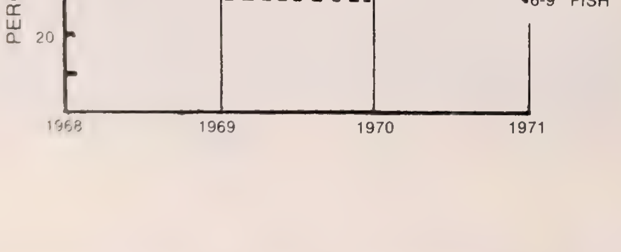
Hatchery	Total lbs.
Charles L. McLaughlin Hatchery	214,865
Montague Hatchery	75,593
Palmer Hatchery	500
Sandwich Hatchery	107,182
Sunderland Hatchery	106,635
Total State	504,775
Total Federal	28,037
Grand Total	532,812

This table includes all trout stocked for fishing and management purposes. It does not include interhatchery shipment or retained brood stock.

Fish and Game photo by John Lindenberg

Assistant Aquatic Biologist John Lindenberg, an experienced skin diver, used an underwater camera, donated to the Division by the Greater Lowell Fly Tyers, to photograph these rainbows being stocked through the ice. Here and on other occasions Lindenberg observed the fish to disperse over the entire pond almost instantly.

The graph below depicts the increase in size of Division trout since 1968.



system was investigated. Twenty-eight stations were sampled for fish using rotenone, electrofishing gear, gill nets and seine. A total of 14,176 fish were collected representing 27 species. Based on abundance the five most common species ranked in order were white sucker, blacknose dace, brown trout, longnose dace and brook trout. Chemical and physical data indicated the drainage contained extensive coldwater fish habitat.

Warmwater Fish Investigations

All warmwater fish study activities were continued in 1970 with the addition of analysis of fish for mercury content.

In Congamond Lakes where a forage study is in progress on landlocked alewives, the vertical distribution of this species was determined throughout the year. In the spring they were found to range from surface to bottom with a heavy concentration close to the bottom. In the summer, they were distributed evenly down to the hypolimnion. In the fall and winter under ice cover, landlocked alewives tended to stay in the middle layers of water, avoiding both surface and bottom. Forage value of landlocked alewives appears quite high for chain pickerel.

Results of Lake Chauncey fish sampling showed a further decrease in the walleye population. Only three adults were sampled ranging from 15.5 to 20 inches in length. No evidence of the 1968, 1967 and 1966 year classes of walleye fry stocked as experimental maintenance plants was found. This demonstrated the folly of attempting to introduce or sustain a walleye population in the presence of an existing fish population through stocking fry.

The northern pike population in Cheshire Reservoir was found to be increasing. The winter ice fishery for northern pike more than doubled, increasing from 317 pounds in 1970 to 636 pounds in 1971. On 21 February 1971 one party fishing the north basin of the lake caught a total of 52 pounds of northern pike with the largest of the five fish measuring 39.5 inches and weighing 19 pounds. Growth rates of northern pike from Cheshire are rapid and average at age group: I, 11.2; II, 21.0; III, 30.1; and IV, 33.8 inches.

Evaluation of weed control practices and effect on fish populations continued at Little Chauncey with an additional application of 2,4-D pellets to suppress emergent aquatic vegetation. Since the Department of Public Health conducted a weed control project for Billington Sea, Plymouth, employing sodium arsenite, the Division, due to concern of adverse effects of this herbicide on the aquatic ecosystem, initiated a two-year study. The treatment program consisted of an application of 6,000 gallons of sodium arsenite to kill submerged aquatic vegetation. Plankton, benthic organisms and fish served as the focal point for pre and post-treatment investigations.

To determine if mercury, an environmental contaminant, was present in fish from Massachusetts, 59 fish collected from 27 statewide-scattered sample sites were analyzed for mercury content at the Field Headquarters in Westboro. A Perkin-Elmer, Model 303, Atomic Absorption Spectrophotometer was used for analyses. Sample cross checks were made with four other laboratories with close agreement of results. Analysis of tissue revealed mercury concentrations from 0.03 to 1.36 ppm. Eight of the 24 fish collected from 11 streams contained mercury at or above the 0.5 ppm level. With the exception of two alewives collected in the vicinity of a known mercury pollution source on the Taunton River in Dighton all fish containing mercury in excess of 0.5 ppm consisted of predators; walleye, smallmouth bass, largemouth bass and chain pickerel. These fish were collected from the Housatonic, Connecticut, Millers and Merrimack Rivers. Fourteen of the 35 fish collected from lakes and ponds contained mercury above the 0.5 ppm level. With the exception of a redbreast sunfish from Billington Sea, Plymouth, all fish above the 0.5 ppm level were predators or of a predator size. Salmonids collected from the wild were found to contain low levels of mercury, 0.32 ppm or less. Twenty-two trout from the McLaughlin, Sandwich, Sunderland and Montague hatcheries were also analyzed and found to contain levels ranging from 0.0 to 0.10 ppm.

The Division's laboratory at Westboro Field Headquarters is equipped to monitor statewide trends in mercury, pesticide and PCB pollution.

Survey and inventory work to update information on pond fish population status was carried out on 15 ponds during the summer months.

Development Activities

At Wallum Lake, Douglas, 175 tons of ground limestone was spread on the ice at the northern portion of the lake in Massachusetts. The Rhode Island Division of Conservation spread an equal quantity on the southern portion of the 327-acre interstate lake. Previously, poor trout survival had been attributed to low pH conditions at Wallum and the liming operation was designed to correct this condition. A pH of 5.0 in January prior to liming increased to 6.5 after ice-out in April. The lake will be checked periodically to determine term of improvement.

Four ponds in southeastern Massachusetts totaling 329 acres were reclaimed for trout management. The ponds were Fearing, Little and Sandy, Plymouth, and Peters, Sandwich. Following reclamation in November and December 45,480 rainbow trout fingerlings were stocked in the treated ponds.

Additional work consisted of fishing area maintenance and improvement. Roads were maintained and improved for fishing access on the Squannacook, Westville and Birch Hill Wildlife Management Areas. A parking area and boat launching ramp were constructed at Little Chauncey Pond, Northboro, and facilities enlarged at Chauncey Pond, Westboro.

Pesticide Studies

The first year of study on pesticides funded in part by the Division of Water Pollution Control as Research and Demonstration Project 70-9 was completed. The major objectives of the study are to monitor major watersheds of the state to determine pesticide pollution trends and investigate the use of freshwater mussels as indicator organisms.

During the year, 85 fish from sixteen sample stations were analyzed. The trend of DDT and its analog residues in fish appears to portray a general decline from 1968 to 1970. This may in part be due to developed capability to separate polychlorinated biphenyls and/or restrictions imposed on the use of DDT in Massachusetts. Polychlorinated biphenyls were found present in fish samples from nine streams.

Additional study on continuous flow low-level exposure of mussels is planned to determine rate of tissue concentration of materials in respect to elapsed time. Also, field use of mussels is planned to demonstrate whether biological monitoring can be employed to establish general locus of the source of compound introduction in streams.

Northfield Resident Fish Study

In January 1969 the Division proposed certain resident fish studies in the Connecticut River north of Turners Falls to Northeast Utilities Service Company. The study proposal was in accordance with conditions imposed by the Federal Power Commission in issuing the Northfield Project license to the company. The study objectives were to determine effect, if any, of the operation of the Northfield Mountain pumped storage project on fish in the river.

In September 1970, the study, which is funded completely by the company, was initiated. Broad facets of the study will include investigating the fish population complex and relative abundance, angler utilization of the fishery, invertebrate community, and water chemistry parameters. This work will be conducted over a four-year period on a pre and post-pumped storage operational basis.

Massachusetts Cooperative Fishery Unit

Three projects financially supported by the Division of Fisheries and Game were conducted by the unit located at the University of Massachusetts.

The first study concerned the behavior and migration of shad as affected by environmental parameters in the Connecticut River. Twenty-eight shad were tagged with sonic tags and behavioral patterns were monitored. The purposes of the study are to determine relationship of swimming rates with spawning activities and schooling intensity, and behavior of shad lifted over the Holyoke dam.

Another study involves a method of storing shad sperm or "milt" for future use in artificially fertilizing eggs. Shad spawning activities, characteristics of spawning areas and location of potential spawning sites are also part of this study.

The third Unit project is investigating some aspects of the life history of the blueback herring in the Connecticut River. Age and growth, spawning period, fecundity and food habits of juveniles are being determined.

All three studies relate to the Connecticut River and the Division's interest in the anadromous fish restoration program.

Respectfully submitted,
Colton H. Bridges, Superintendent

GAME

Fish and Game photo by Bill Byrne

THE primary objective of wildlife research and management is to insure the preservation of native species in the wild and to harvest wisely only surplus numbers of those few species termed "game." Intelligent harvest implies a prior knowledge of how many animals are required to maintain a wildlife population at a desired level. Evaluating the population structure of a particular species and its interrelationships with other plants and animals in the wildlife community is necessarily a basic function of wildlife research.

Complementing research findings is the application of management techniques to arrive at desired wildlife population levels, thus insuring the continuity of the wildlife source, and where applicable, providing a harvestable surplus crop.

White-tailed Deer Project

The 1971 harvest of deer totaled 2,403. Of this number, 36 were taken by archers during the 12-day archery season, November 16 through November 28, 1970. The harvest was composed of 1,598 males and 769 females from a total of 2,367 deer taken during the shotgun season. Twenty-four males and 12 females were taken during the archery season. The harvest represents an increase of 364 deer above the 1969 figure. Twenty-six percent of the total harvest was taken in Berkshire County. The counties of Berkshire, Franklin and Worcester accounted for 62 percent of the statewide harvest. Gunners took 58 percent (1,379) of the total harvest on the first and last days of the season.

Antlerless deer permits were issued in the following categories:

Sportsmen (mainland Massachusetts)	6,000
Nantucket	400
Farmer landowner	347
Total	6,747

The success rate of permit holders was 1 in 6 considering both male and female deer. Thus, antlerless deer permit holders accounted for 48 percent (1,141) of the total 1970 harvest.

Natural Resources Officers reported 698 non-hunting deer mortalities through the period January 1 to December 31, 1970. Of this number, 324 were males and 321 females. No sex data were given for 43 additional deer.

Above: Chief of Wildlife Research, Warren Blandin, steadies recently captured wild turkey poult while Project Leader Jim Cardoza measures primaries to determine age. Below: A wild turkey bolts into the air immediately after release. A far cry from their sluggish domestic cousins, wild birds are excellent flyers capable of speeds in excess of 50 mph.

Motor vehicles accounted for 57 percent (400) of the total non-hunting mortalities; dogs accounted for 29 percent (204) of the non-hunting mortalities. These two categories represent 86 percent of all reported non-hunting deer mortalities. Fifty percent of all non-hunting mortalities occurred between January 1 and April 30, 1970. During the same time, 95 percent of the dog kills were reported. These data represent a two percent increase over the 1969 non-hunting mortalities (682). They also show a change in the male-female sex ratio in the kill. The 1969 non-hunting mortalities occurred in the ratio of 47.0 males to 53.0 females as compared to 50.1 males to 49.9 females in 1970.

Ninety female deer collected between January 1 and May 31, 1971, were examined. Their reproductive rates were as follows:

Age Class	*Number in Sample*	*Number of Fetuses*	*Reproductive Rate*
Yearlings	27	8	0.24 Fawns per doe
Two-year-old	16	26	1.63 fawns per doe
Three-years+	41	70	1.71 fawns per doe

Based upon the study of statewide deer harvest, non-hunting mortalities and reproductive rates, recommendation was made that the deer herd be managed as three separate units:

Unit I	Mainland Massachusetts
Unit II	Nantucket Island
Unit III	Martha's Vineyard Island

The distribution of antlerless deer permits should be designed to regulate the deer harvest in each unit with the objective being to produce a large enough female segment to sustain the breeding population, while at the same time producing an increasing number of male deer for harvest. A substantial increase in total harvest of deer in this state will require that the size of the breeding population be permitted to expand for several more years under the permit system before the system can be used to regulate and maintain herd size at a level that will permit a satisfactory sustained yield of adult males.

Hunter Utilization of Wildlife Management Areas

Total estimated hunter effort of 14 wildlife management areas was 43,664 hunter trips. The most heavily utilized area was Birch Hill (7,200 hunters), followed by Myles Standish (6,277), Crane (5,499), and Northeast (4,049). Housatonic Valley (685) and Quaboag (686) had the least usage of the areas surveyed.

Local hunters continue to be heavy users of wildlife management areas. However, hunters in the 20-50 mile distance group frequented certain areas (Myles Standish, Northeast) and on one area (Crane), hunters from beyond fifty miles predominated. Game bag data were collected on five areas. A total of 2,253 hunters were contacted, of whom 657 (29.2 percent) had taken at least one unit of game. Eight hundred thirty-one units of game of eight species were recorded during the nine-day sample period.

Black Bear

Recent regulation changes shortened the season on black bear and established a permit requirement and a mandatory check. Applications for permits were received from 214 individuals. These applicants were subsequently contacted by postal questionnaire, and a response of 177 (82.7 percent) was achieved. Ninety-four persons hunted bear in 1970, of whom 45 had hunted bear in previous years. The average bear hunter expended 14.5 hours during 1.9 days in pursuing his quarry. Seven hunters saw bear, but none succeeded in the harvest of one during the legal season.

All available recent reports of bear were collected. Reports of 138 sightings involving 150 bear were collected for the period 1952-1971. Berkshire and Franklin counties yielded 110 reports (75.8 percent) and Hampden, Hampshire and Worcester counties comprised the remainder. A report on the history of the black bear in Massachusetts is being prepared. This report will detail trends in distribution and populations of the bear from pre-colonial times to the present.

Beaver

A total of 509 beaver were trapped in 79 Massachusetts towns during the 1970-71 beaver season. Worcester, Berkshire and Franklin counties together yielded two-thirds (67.8 percent or 345 beaver) of the season's harvest. Half the beaver (51.1 percent) were trapped in the first month of the season. The Conibear trap was used to take 397 beaver, or 61.5 percent of the harvest. The average price of a Massachusetts beaver pelt was $10, yielding an estimated harvest value of $5,090. Moving of nuisance beaver continued to be an expensive and time-consuming job for Division personnel.

Turkey

The fall 1970 Massachusetts turkey population on six central release areas totaled 237 turkeys.

Fish and Game photo by Bill Byrne

Above: A Canada goose flaps and runs over the surface of the water in courtship display. Below: A wary gander stands guard while mate broods young.

photo by Werner Meinel

Hen pheasants in winter

Populations on individual areas were as follows: Quabbin - New Salem (103); Barre - Oakham (50); October Mountain Area (29); Town of Mt. Washington (28); Douglas State Forest (24); Myles Standish State Forest (3). Thirty additional birds were present in dispersed flocks. The late-winter-early-spring population was 109 turkeys statewide.

The turkeys of game farm ancestry, which lacked the strength and instincts necessary for survival and were a threat to the genetic health of the established population, were live-trapped in the Town of Mt. Washington using a narcosis-inducing chemical agent. Dispersal of turkeys from release sites in Barre, Douglas, and New Salem continues. This trend is encouraging, and public cooperation is requested in reporting turkeys in order that population movements may be carefully monitored.

The Northeast Turkey Committee met in Falmouth, Massachusetts in October 1970. Turkey biologists from eight agencies discussed pertinent aspects of turkey research and management in their respective states.

Pre-hunting Season Waterfowl Banding

A total of 1,177 waterfowl and marsh birds were banded during the months of April through October 1970. Banding was accomplished by several methods including nest trapping, bait trapping, cannon netting, airboat night lighting, and release of hand-reared birds. The banding total included 377 wood ducks, 333 mallards, 174 black ducks, 25 black x mallard hybrids, 3 mallard x domestic hybrids, 58 green-winged teal, 51 blue-winged teal, 3 hooded mergansers, 1 American merganser, 1 pintail, 50 freshwater coot, 21 sora rails, 11 pied-billed grebes, 7 common gallinules, 1 American bittern, 50 Canada geese and 7 screech owls.

Winter Waterfowl Banding

Division personnel along with three cooperators banded a total of 2,303 ducks at 30 locations using bait traps and/ or cannon nets, during the period January 1 to February 5, 1971. One thousand four hundred and fifty-three ducks were banded on coastal areas of which 1,330 were black ducks. An additional 850 ducks were banded at park-type inland sites. These included 662 mallards, 103 blacks, 78 black X mallard hybrids and 8 other ducks.

An experimental diving duck trapping program was hampered by poor weather conditions and the only bird caught was a male bufflehead.

Wood Duck Nesting Study

Wood duck duckling production on Suasco Valley watershed study areas fell 17 percent from the 1970 average although the number of nest attempts increased by three. The lower production figure for 1971 is due primarily to a slightly smaller average clutch for the 1971 nests.

Duckling production on 10 central Massachusetts study areas fell 29 percent from 1970 and was down 13 percent from the previous three-year average. Part of the decline was due to the draining of one of the study areas limiting its attractiveness to nesting wood ducks.

A check of several non-study wetlands indicated a slight increase in production. No numerical calculations can be made because of egg taking on some of the areas in past years.

Forest Pheasant Project

During the fiscal year 1,421 hybrid forest pheasants were released on Prescott Peninsula, Quabbin Reservation, and Martha's Vineyard. The releases were comprised of all adults. Survival and reproduction was noted on Martha's Vineyard in contrast with Quabbin Reservation releases where only one known hen survived the winter. Two males were live-trapped on Martha's Vineyard and used for breeding purposes. For unknown reasons fertility of hybrid matings has greatly declined.

Working in cooperation with the University of Massachusetts, attempts were made to incorporate more copper pheasant blood lines into the present hybrid pheasant flock. However, numerous difficulties in handling this forest pheasant were experienced.

Plans for the coming period will be to release this year's production on the same release site with continued major emphasis on associated fertility problems.

Woodcock Project

During the spring of 1971, the Division conducted a randomized woodcock singing ground survey on 17 routes established by the Migratory Bird Population Station. Division of Fisheries and Game, U.S. Army, and Bureau of Sports Fisheries and Wildlife personnel participated.

Also during this period, Division personnel mist-netted and banded a total of 81 "singing males" plus two adult females. Two broods of woodcock chicks totalling seven chicks were also banded. No harvest data was collected during this period.

Game Farms

Theft of game birds at our East Sandwich Game Farm resulted in losses of over 400 bobwhite quail and over 1700 pheasants. All stolen birds were selected brood stock which greatly hampered the 1971 production schedule.

Efforts to use more automation and control game bird diseases at all game farms continue.

Dove Banding Project

The Dove Banding Project in Massachusetts was carried out from July 2, 1970 through October 2, 1970 in cooperation with the Manomet Bird Observatory, Manomet, Massachusetts. A total of 2040 doves were banded at 11 sites between central and eastern Massachusetts. At three of these sites (Wilbraham Game Farm, Newbury Wildlife Management Area, and Sandwich Game Farm) banding was done by Massachusetts Division of Fisheries and Game cooperators. Banding was done by Air Force personnel at Westover Air Force Base and the remaining seven sites were manned by personnel from the Manomet Bird Observatory. Sites at which 100 or more birds were banded are as follows:

South Orleans	102
Crane Wildlife Management Area	111
Myles Standish State Forest	1014
Newbury Wildlife Management Area	230
Wilbraham Game Farm	392
Westover Air Force Base	100

As of this writing there have been 20 recoveries reported to us of doves banded in 1970. The recoveries are from eight states from Massachusetts to Florida.

Respectfully submitted,
Warren W. Blandin, Chief of Wildlife Research
and E. Michael Pollack, Chief Game Biologist

Below, top to bottom: 1. Division biologists use their personal bird dogs to locate woodcock nests. 2. After eggs hatch the woodcock crew returns to band young (Bill length indicates hatching date). 3. When birds flock to fields on summer evenings they are spotted with hand-held aircraft landing lights, netted and banded.

Development and Maintenance of Wildlife Management Areas

THE object of this program is to develop and maintain hunting and fishing areas with capability of supporting maximum wildlife populations. Concurrent with this objective, the management area offers other forms of outdoor recreation such as nature study, hiking, horseback riding, snowmobiling, bike riding, picnicking, berry picking, dog training, etc. Development objectives are aimed at supplying the maximum amount of good wildlife cover on the available amount of land for the maximum number of users. Maintenance objectives are to preserve natural cover, maintain existing cover, and keep management facilities usable.

Wildlife carrying capacity is increased through agricultural planting for farm-oriented wildlife, manipulation of forest cover types for forest game and water control development for waterfowl and fishes. This is accomplished through grain plantings, brush cutting, herbiciding, timber harvests, tree and shrub plantings, and constructing dams, dikes, and channels.

Equally important is the development and maintenance of management facilities such as buildings, roads and trails, parking lots, bridges, as well as posting and replacement of signs and boundary markers. These facilities provide easier access for both the area users and area managers.

Long range management plans are being prepared for all the wildlife management areas. In 1971, management plans were completed for the Crane, Crane Pond, Stafford Hills, Myles Standish, and Downfall Wildlife Management Areas.

During fiscal 1971, $92,761 was spent in carrying out this program. Below, listed by activity, is the breakdown of work done.

1. Maintenance of Buildings:	1 Residence 7 Storage 4 Headquarters
2. Maintenance of Dams:	7 Dams
3. Maintenance of Bridges:	6 Vehicular 2 Foot
4. Construction of Roads and Trails:	3 Trails - 11.2 miles
Maintenance of Roads and Trails:	88 Trails - 91.2 miles 3 Roads - 7 miles
5. Construction of Fences:	3 Fences - .5 miles
Maintenance of Fences:	4 Fences - 1 mile
6. Construction of Parking Lots:	3 Lots
Maintenance of Parking Lots:	45 Lots
7. Maintenance of Water Gates:	1 Gate
8. Construction and Erection of New Signs:	33 Information 306 Boundary
Reposting and Maintenance of Signs:	1,067 Information 410 Boundary
9. Planting Trees and Shrubs:	2,275 Trees 7,000 Shrubs
10. Planting Annual and Perennial Grains and Grasses:	344 Acres
11. Creation of Wildlife Clearing:	44 Acres
12. Control of Vegetation:	133 Acres - brushcutting 33 Acres - herbiciding
13. Timber Management:	32 Acres - selective cutting
14. Construction and Maintenance of Wood Duck Nesting Boxes:	880 Boxes

GAME DISTRIBUTION

July 1, 1970 to June 30, 1971

PHEASANT LIBERATIONS:	
August	6,910
October - November	40,166
Sportsmens Club Rearing Program	6,942
	54,018
Miscellaneous Releases:	
Hybrids	1,421
Brood Stock (Spring release)	3,879
Field Trials, Youth Hunt, etc.	1,076
QUAIL LIBERATIONS:	
Public Hunting Grounds	3,340
Field Trials	150
Brood Stock (Spring Release)	50
	3,540
HARE LIBERATIONS:	
Distributed in March	1,101

REALTY

AT the beginning of the year the Realty Committee reviewed the acquisition program and determined that the most prudent course to follow would be an all-out effort to add acreage to the existing management areas. Many of our areas, the Northeast Area in particular, contain several interior parcels which are privately owned. While these parcels remain undeveloped there is no problem, but when homes are constructed the huntable area within the mangement area is, in many instances, greatly reduced. Wildlife management techniques were found to be more easily executed and far more successful on solid tracts. It is also easier to set up a workable system of controls during that part of the season when hunter concentration is at its peak.

The fact that we were also coming to the end of available money for acquisition indicated that the best course to follow was to add to the lands we already had rather than spread ourselves thin on a random acquisition program. This strategy, however, did not rule out the Division's efforts to acquire coastal wetlands, salt marsh, river frontage and access sites.

Accordingly, during the year, acreage was added to the Squannacook River, Moose Hill, Millers River, Stafford Hill, Housatonic River, Canada Hill, Quaboag and Northeast Wildlife Management Areas.

River frontage was acquired along the Millers River as well as the Housatonic and Quaboag Rivers. Salt marsh acreage was added to the north shore marshes already in Division ownership.

The Realty Section prepared and distributed maps of all the management areas before and during the hunting season. It also prepared a booklet entitled "The Time to Report and Reflect," an accounting to the public of monies already spent for acquisition. In it each management area was described and its location shown on a map. General comments on the realty program were also included.

Much time was spent in surveying questionable property lines on different areas, and a concentrated effort was made to make the master Land and Building Inventory as accurate as possible.

Staff members assisted District Managers and District personnel in locating lines when the management areas were being marked. Federal funding participation was prepared and periodically checked by staff members.

Preparing maps for Federal and other state agencies engaged in studies and land usage planning occupied another area of the staff's time.

A special wetlands team from the University of Massachusetts made up of students and faculty specializing in wildlife, soil conservation, hydraulic engineering and landscape architecture, canoe the vast Hockomock Swamp. The trip was organized by the Division as part of its campaign to acquire this important piece of wildlife habitat.

We would be remiss if we failed to acknowledge the wonderful cooperation and encouragement given us throughout the state. We have tried to live up to this splendid backing by being prudent and thrifty in administering acquisition funds. We know that public ownership of lands and waters in every part of the state is necessary for maintaining a quality environment both for humans and wildlife.

If we are to continue to live up to our obligations of offering the public fish and wildlife to observe, study and harvest, we cannot in good conscience adopt the policy of acquiring needed lands at any cost. Had we adopted this policy, the available funds would have been depleted long ago, and we would have found our work a lot easier--with less than half the land we have today to show for the investment. Our policy has been and will continue to be one of careful conservatism based on the principle of "the best buy for the least expenditure." In this regard we are particularly indebted to all those generous conservationists who have sold us land at reduced prices in the knowledge that that land would be preserved forever in its natural state.

Respectfully submitted,
Joseph Johnson, Chief of Realty

Massachusetts
FISH & GAME LAWS
1972

A beaming Major Mudd displays Division's AACI Av
best T.V. conservation program of the year. The
winning movie was aired as part of the Major Mud

Information a

News Releases

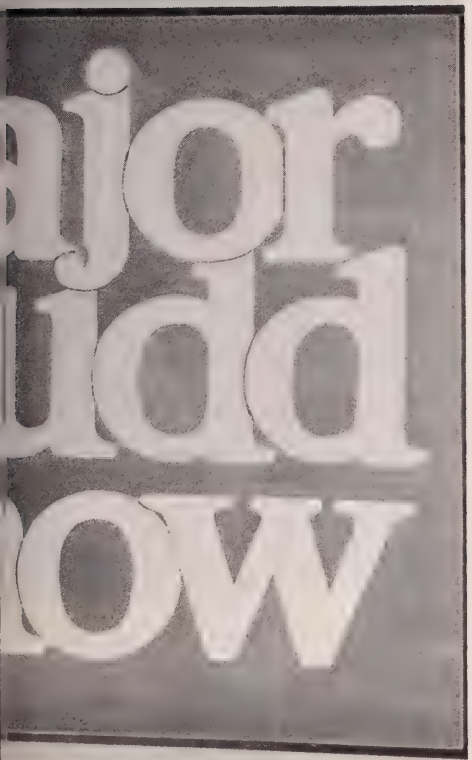
DURING fiscal 1971 the I and E Section published 27 major news releases each of which consisted of two or more news items.

Again the media cooperated in relaying the information to the public quickly and accurately. The outdoor writers of the state continue to be the most important circuit in this information channel.

The mercury scare provided the topic for the first news release of the year. In the release the Division announced that its water quality section was going to study mercury in the state's entire wildlife community. At that time mercury levels in indigenous fish and wildlife remained below the danger mark.

In one release that detailed the editorial expansion of the Division's magazine we included an appeal for manuscripts and photographs pertaining to wildlife or the environment. (Since the magazine is still offered to the public free we were unable to offer payment for accepted material.) As a result of the release we received several high-quality stories and two excellent photo series.

A release during the month of October reported the Northeast Turkey Symposium held in Falmouth, Mass. The Bay State has a small but solidly



Skeet Shooting at the Conservation Camp.

ucation

established turkey population which, along with the Pilgrim-Cape Cod tradition, made Massachusetts an ideal state to host the conference.

One release, entitled "That Odd-looking Pheasant," received the widest use of any release of the year. (The "odd-looking" pheasant was the hen "dilute," a blond variant developed by the Division in cooperation with the University of Massachusetts so that hens and cocks could be immediately identified after hatching.)

Another widely-used release reported the first recorded spawning run of landlocked salmon in Quabbin Reservoir. Eggs collected in main feeder streams were taken to the Palmer salmon hatchery.

The Massachusetts deer herd has traditionally been an important subject for news releases. The first in the annual series of deer-oriented releases discloses the number of antlerless permits to be issued the coming fall. (This year the number was 6000.) Also included in the release is the scheduled date of the public drawing and an invitation to the public to attend. The next "deer releases" remind sportsmen of the upcoming archery season and report the early successes. Deer regulations for the shotgun season and the list of checking stations are published over the course of several releases. Finally, when deer week begins, the I and E Section keeps an open line to the outdoor writers, informing them by phone and news release as to how the annual harvest is shaping up.

Another function of the "deer releases" is to inform the public about various protective measures such as rifle bans and dog-restraining orders.

Very shortly after the NBC special "Say Goodbye" the I and E Section learned that one sequence in the film rated as the year's worst piece of yellow journalism. It depicted a mother polar bear writhing in her death throes as her stunned offspring watched pathetically. Director Shepard, a member of the Executive Committee of the International Association of Game, Fish, and Conservation Commissioners, informed us that the footage had been acquired from the Alaskan Fish and Game Department and used without permission. It had actually depicted a mother bear drugged with a tranquilizer gun. After a quick examination and tagging, the bear had been released unharmed. This brazen assassination attempt on the sportsman's character was promptly

Right to left: Bruins superstar Bobby Orr and Coach Harry Sinden start out on their first pheasant hunt as guests of the Division. Bobby swings on a bird, misses an easy shot, and, with characteristic humility, laughs at himself.

laid before the public via the news release route.

The mystery of the drunken bear (See Annual Report, 1970) was finally solved, and a news release summed up the whole incident, which spanned two years. Natural Resource Officers Hammond and Kulish were successful in obtaining a conviction for the owner of a roadside bear display who had been illegally releasing "surplus" bears, drugged for easy transport.

Because the I and E Section had been constantly bombarded with requests for topo maps we published a news release asking for the names and addresses of Geodetic Survey map outlets in the state. The response was so overwhelming that we were able to prepare a nearly complete list of outlets that is available to anyone requesting it.

Governor Francis W. Sargent, former Director of this agency, appealed to sportsmen and environmentalists to clean up rivers, streams, ponds and lakes during Earth Day. Our news release carried his request and was met with impressive response especially by sportsmen's clubs who provided much of the leadership for the various projects undertaken.

Finally, the I and E Section made use of the news release medium to publicly thank the Hampshire County League of Sportsmen's Clubs for their special award which they presented to Board member Bradlee Gage for his "sportsmanship and dedicated work for the benefit of all sportsmen in Massachusetts."

Help From Other Agencies

The Division received fine cooperation over the year from other state agencies such as the Department of Natural Resources, MDC, Public Works, Public Health, Public Safety, etc.

While it is usually unwise to single out one agency for praise, the Department of Commerce and Development assists us in so many ways that it deserves special consideration. The Department provided a tour guide for our largest and most modern trout-rearing facility--the Charles L. McLaughlin Hatchery. Also, Commerce and Development continues to support our Division in the Freshwater Fishing Contest. In addition to publicizing the sport of fishing, the program provides our fisheries biologists with valuable information as to species distribution and growth. During the New England Sportsmen's Show the Department assists us in our displays, and awards large plaques to the record holders of all freshwater fish categories.

Wetlands

The Division launched its campaign for the passage of its most important piece of legislation ever--the "Permanent Protection Wetlands Bill"--with an all-out effort by the Information and Education Section and special wetlands coordinator Warren Blandin, Chief of Wildlife Research. After the initial hearing before the Massachusetts Natural Resources Committee, the I and E Section published a story "Save Our Wetlands" in the March-April edition of MASSACHUSETTS WILDLIFE. The piece was aimed at alerting the public to the ecological value of wetlands. Over 10,000 reprints of the four-page story were distributed around the state.

Slides and movies outlining the need for wetlands preservation were prepared and presented to the public by Division personnel. T.V.

Right, top to bottom: 1. A BIG MESS FOR A LITTLE VOLUNTEER. Earth Day, 1970 was an encouraging first step, and the Division tried to keep the spirit alive through 1971 with a special four-part serial in MASSACHUSETTS WILDLIFE: 2. This young barred owl, captured on film by Jack Swedberg, was featured (courtesy of WORLD WILDLIFE ILLUSTRATED) in a special issue of MASSACHUSETTS WILDLIFE devoted entirely to birds of prey. The issue marked further expansion in editorial scope (See 1970 Annual Report); 3. Charles Murphy of Concord displays his decoy-carving talent as part of the Division's exhibit at the New England Sportsman's Show.

coverage focused on the preservation of the vast Hockomock Swamp in the Bridgewater-Easton-Taunton area.

Museum

The state Fish and Game Museum, the inspiration of former outdoor writer Mike Beatrice, continues to grow.

The museum is presently housed in temporary quarters on the third floor at Westboro Field Headquarters (on the right off Route 135, toward Northboro from Route 9).

Taxidermist Ed Shaw has offered to mount a pair of every legally harvestable waterfowl found in the state. Birds are contributed by waterfowl hunters. The birds donated during this past season went a long way toward filling the shelf space that will eventually house 70 pairs of waterfowl.

Exhibits

The Division's nine-day exhibit at the New England Sportsmen's Show again featured waterfowl. This year the display's theme was educational and centered around the identification of seven live, paired species. Corresponding birds were mounted and labeled on a rotating drum in the center of the pool. Drum and mounted birds were provided by the U.S. Fish and Wildlife Service, Parker River branch. Also at the exhibit, Division personnel distributed pamphlets entitled "Know Your Ducks" which contained illustrations and brief write-ups of all our native waterfowl.

Television Programs

"That Odd Looking Pheasant" (see News Releases) was also the title of part of the Major Mudd Show, a two-hour children's program appearing on WNAC. At that time I and E Chief Dick Cronin summarized the Division's impressive accomplishment of developing sex-linked color patterns in pheasants for easy sexing after

Youth In The Outdoors
JULY-AUGUST, 1970

Massachusetts
Wildlife
SEPTEMBER-OCTOBER, 1970

Massachusetts
Wildlife
NOVEMBER-DECEMBER, 1970

hatching. As visual aids Cronin used footage taken by Division photographers and live birds, both normal and "dilute." The show won the Division a first prize in national competition for the best conservation television show of the year. The award was presented by the American Association for Conservation Information.

District I and E Work

In addition to many miscellaneous information and education services, personnel from the four wildlife districts published 41 formal news releases, attended and / or spoke at 248 meetings (mostly at sportsmen's clubs), conducted 22 T.V. shows and six radio shows and prepared or assisted in the preparation of 12 exhibits at various fairs and sportsmen's shows.

Massachusetts Wildlife

HABITAT DESTRUCTION

The rate of land destruction and abuse is increasing at an alarming rate, and while available wildlife habitat dwindles, the public demand for wildlife--for both consumptive and non-consumptive uses--increases. It has become obvious to all active conservationists that the single greatest threat to wildlife is habitat destruction.

With this in mind the editors of MASSACHUSETTS WILDLIFE have steered the magazine away from its traditional role as a sporting publication and toward a new role as a conservation journal.

The shift has not been an easy one, and in some circles has kindled resentment. But in fulfilling its obligations to the sportsmen and general public of this state, the Division is convinced that the magazine must change with the times. We are losing our fish and wildlife at a shocking rate because we are losing the habitat that supports and produces them. The old days when sportsmen could afford to be aloof and bask in the certainty of ever-continuing sport have passed. Unless sportsmen concentrate on the MAKING as well as the TAKING, the future of their sport will be sealed in concrete and asphalt.

In the March-April issue, traditionally a fishing edition, we took a somewhat different tack this year by replacing the four-page list of stocked trout waters with a special section on the value of wetlands as fish and wildlife producers. (The stocked trout list was printed separately and mailed to those who requested it.)

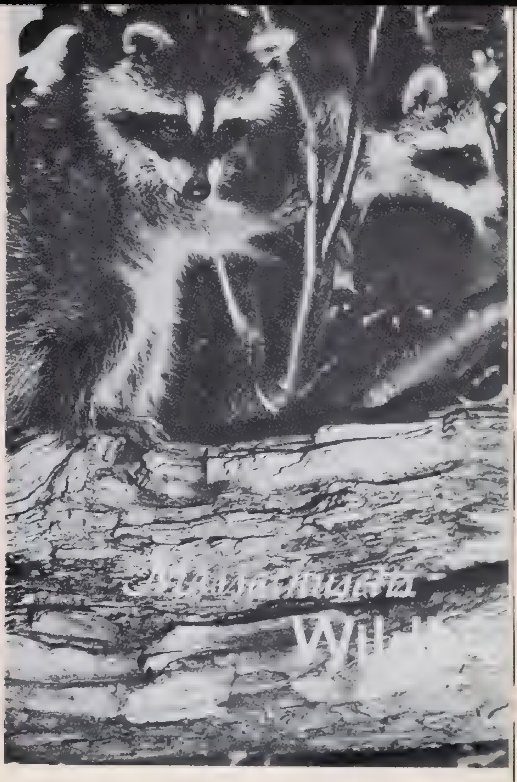
In addition to the wetlands section, the issue contained an editorial by Director James M. Shepard imploring fishermen to ensure the future of their sport by supporting the "Permanent Protection Wetlands Bill."

"....The time has come," Shepard wrote, "for Massachusetts anglers to concentrate less on what's being done for them and more on what they can do for fishing. The fresh and saltwater fisheries of this state are ecologically riveted to wetlands and, unless something is done to check wetland exploitation, the day may not be far off when that stocking list won't be worth a six-cent stamp."

Earth Day 1970 was one of the most encouraging events we have witnessed. At last people other than sportsmen were voicing concern about the environment that sustains our lives and the lives of every other life form.

ssachusetts
Wildlife
JANUARY-FEBRUARY, 1971

Massachusetts
Wildlife
A. STRZELE



In an effort to keep the Earth Day spirit alive the editors conducted a survey in which they queried every school in the Commonwealth as to Earth Day activity. In a four-part serial entitled "Earth Day Honor Roll" we reported in detail the activities of all participating schools, concluding with a summary of what we considered to be the best ideas.

It was our hope that the series provided: 1. a motive for schools that had not had programs to get going the following year; 2. an index of ideas from which teachers with little knowledge of the environment could choose activities appropriate for their particular situations. The four issues in which the series appeared were made available to any Massachusetts teacher requesting them.

Finally, in the September-October issue we reported on the Division's mercury monitoring program, hoping to increase public involvement in environmental problems confronting fish and wildlife such as chemical pollution.

THE ANTI-HUNTING BUG

Recognizing anti-hunting sentiment as perhaps the second greatest threat to the sportsman's future and ultimately to the future of wildlife, we have also directed our effort at educating non-hunting conservationists who could easily become ANTI-HUNTING protectionists.

In a state where five and a half million people compete for five and a half million acres, the anti-hunting bug is especially virulent, and under these circumstances we believe that our editorial approach is the best investment of the sportsman's dollar that we can make. We feel we can help him little by indulging him with a steady diet of tired-out hunt-fish copy that he can pick up at any newstand for 50 cents.

A Democrat addressing a houseful of Democrats is often wasting his effort -- he has their votes already. We feel that we do not have to convince the sportsmen of the pleasure and benefits that can be derived from hunting and fishing. We have therefore tried to select articles of general interest to all conservationists, not just sportsmen. Hopefully the material has broadened the sportsman's world and enriched his outdoor experience, but more important, it has increased our readership (now about 46,000) to include non-consumptive users of wildlife resources. If we can show them that hunting and fishing have an important place in wildlife conservation we will have accomplished a great deal.

Articles like "The Path of the Monarch" (May-June) are popular with everyone with an interest in nature, not just hunters. The same issue also contained an important educational message for non-hunters--a well-reasoned defense of hunting entitled "A Letter to Heather" by Director Shepard which generated more national response than any previously published piece. We feel that a single editorial like this, mixed with articles on the environment, conservation, game and non-game species, is definitely more effective in promoting our cause than an issue full of hard-sell hunting.

The very fact that sportsmen could finance a whole issue devoted to birds of prey (January-February) demonstrates that they are not "blood mongers" lusting after living targets. The Director's editorial in that issue--"The Hunter and the Non-Hunted"--points this out.

In a new one-page section--"Man and the Balance"--we have touched on the most timely and important environmental news, again attempting to recruit a new crop of readers, then educate them to the sportsman-conservationist way of thinking.

The wildlife crosswords by Doug Jackson incorporate all phases of our program and wildlife conservation in general. Confining crosswords to a single subject is tremendously difficult, yet Jackson does it consistently and masterfully. The crosswords have proved a most effective education too. If a reader can figure out for himself that h-a-w-k "fills the owl's niche diurnally and is protected in Mass." (See January-February crossword), the knowledge stays with him longer than if he is told outright.

ARTWORK

Finally, we have begun to mix artwork with photos (See covers). We purchase covers when funds are available. For interior work we rely on young artists who are willing to accept publicity in lieu of payment. We send them xeroxed copies of future stories if time permits and let them use their own inventiveness in coming up with appropriate drawings.

YOUTH

Continuing the youth campaign (See Annual Report 1970) in an effort to recruit new and energetic conservationists for the future, the editors of MASSACHUSETTS WILDLIFE published a special issue devoted to youth in the outdoors (July-August). The big attraction was a photo story by Richard Cronin featuring Bruins superstar Bobby Orr and coach Harry Sinden on their first pheasant hunt. When Bobby blew an easy shot Dick snapped some top-notch "laugh-at-yourself" photos as Bobby reacted with characteristic humility. Other articles included in the issues were: "The City Set Goes Fishing," by James E. Early and Tony Spinelli--a report on the Urban Fishing Program co-sponsored by the Hale Reservation, the Boston Recreation Department, the U.S. Bureau of Sport Fisheries and Wildlife, and the Massachusetts Division of Fisheries and Game; "1970 Youth Upland Game Bird Season," by Bill Pollack and Donald Hawkins--a story on the Division's youth hunt; "Conservation Summer School," by Dick Cronin--a history of the Massachusetts Junior Conservation Camp; and the first of the Earth Day series.

Also appearing in the special youth issue was an editorial by Director Shepard discussing the importance of preparing youth to deal with the environmental crises they will shortly inherit.

"Conservation," Shepard wrote, ". . . must begin with youth because youth is America's most important natural resource. In five years, over half our population will be under 25. They must have constructive attitudes, but more important, they must understand the problems they'll be facing."

Admittedly our youth campaign is a long-range program with long-range returns but it is this type of "think-to-tomorrow" planning that ultimately proves the most valuable.

Respectfully submitted,
Richard Cronin, Chief of Information and Education

Legislation

The following laws affecting the Division of Fisheries and Game were enacted during the legislative session of 1971.

Chapter 60-- An act authorizing trapping by certain unlicensed minors between the ages of 12 and 15 when accompanied by an adult.

Chapter 149--An act increasing the penalties for certain violations of the laws relative to the protection of flood plains and inland wetlands.

Chapter 498--An act giving towns the authority to set boating regulations relative to speed, horsepower, boating hours, etc.

Chapter 876--An act prohibiting the importation, possession and sale of foreign and domestic endangered mammals and reptiles such as alligators, wolves, and certain species of cats.

Financial Report July 1, 1970 to June 30, 1971

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES
Fiscal Year July 1, 1970 to June 30, 1971

Licenses		Price	Number	Gross Amount	Fees Retained by Town Clerk or City	Net Returned To State
Series No. 1	Res. Cit. Fishing	(5.25)	123,615	648,978.75	30,594.95	618,383.80
Series No. 2	Res. Cit. Hunting	(5.25)	59,219	310,899.75	14,665.75	296,234.00
Series No. 3	Res. Cit. Sporting	(8.25)	57,886	477,559.50	14,771.25	462,788.25
Series No. 4	Res. Cit. Minor Fishing	(3.25)	18,079	58,756.75	4,503.50	54,253.25
Series No. 4-A	Res. Cit. Female Fishing	(4.25)	24,212	102,901.00	6,009.25	96,891.75
Series No. 5	Res. Cit. Minor Trapping	(3.25)	218	708.50	54.25	654.25
Series No. 6	Res. Cit. Trapping	(8.75)	581	5,083.75	143.00	4,940.75
Series No. 7	Non-Res. 7-day Fishing	(5.25)	2,323	12,195.75	578.00	11,617.75
Series No. 9	Non. Res. Fishing	(9.75)	3,675	35,831.25	905.25	34,926.00
Series No. 9-A	Alien Fishing	(9.75)	808	7,878.00	198.25	7,679.75
Series No. 10	Non-Res. or Alien Hunting	(16.25)	2,271	36,903.75	448.25	36,455.50
Series No. 12	Duplicate Licenses	(.50)	3,414	1,707.00		1,707.00
Series No. 15	Res. Cit. Sporting	(Free)	17,631			
Series No. 17	Res. Cit. (Mentally Ret.), Paraplegic and to the Blind	(Free)	1,059			
Series No. 18	Military or Naval	(Free)	7,189			
Series No. 19	Paraplegic Hunting	(Free)	4			
			322,184	1,699,403.75	72,871.70	1,626,532.05

HOW THE SPORTSMEN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	1070-0000	$ 126,336.05		
Board of Fisheries & Game	1070-0000	350.00	126,686.05	5%
Information-Education	1070-0000		92,956.88	3%
FISHERIES PROGRAMS				
Fish Hatcheries	1070-2300		454,857.65	17%
Fisheries Management	1070-2300	186,418.15		
* * *Fish Restoration Projects	1070-2342	55,834.76		
Fisheries Management	1070-2400	139,821.96		
Fisheries Research Coop. Unit	1070-2341	10,000.00		
* *Certain Anadromous Fish Proj.	1070-2322	25,745.62	417,820.49	16%
WILDLIFE PROGRAMS				
Game Farms	1070-2400		280,490.09	11%
*Damage by Wild Deer	1070-2451	9,256.31		
Wildlife Management	1070 2400	139,821.97		
Wildlife Research Coop. Unit	1070-2441	8,499.56		
* * *Wildlife Restoration Projects	1070-2461	219,081.04		
* * * *Eastern Dove Management	1070-2502	3,500.00	380,158.88	14%
ENGINEERING AND CONSTRUCTION				
Demolition of Bldgs. Westboro	1070-0093	28,000.00		
Feasibility Study, BBC "	1070-0094	15,000.00		
Const. & Improv. E. Sandwich	1070-2304	61,686.00		
New Well, McLaughlin Hatchery	1070-2317	50,391.00	155,077.00	6%
LAND ACQUISITION				
Land & Waters for Fish and Wildlife Management Purposes	1070-9012	30,874.95		
*Land & Water Acquisition and Development	1070-9013	91,675.64	122,550.59	5%
DEPT. NATURAL RESOURCES				
Supervision Public Hunting and Fishing Grounds	1020-0200	14,019.45		
Natural Resources Officers-Salaries and Expenses	1020-0000	226,749.17	240,768.62	9%
RETIREMENT ASSESSMENT			50,000.00	2%
GROUP INSURANCE			48,392.00	2%
INTEREST ON DIRECT DEBT			74,800.00	3%
SERIAL BONDS AND NOTES			200,000.00	7%
		TOTAL	2,644,558.25	100%

* Continuing Appropriations
* * 50% Reimbursable Federal Funds
* * * 75% Reimbursable Federal Funds
* * * * 100% Reimbursable Federal Funds

APPROPRIATIONS AND EXPENDITURES

Account No. & Title		Appropriation	Expenditures & Liabilities	Reverted
1070 0000	Administration	$ 230,143.00	$ 219,642.93	$ 10,500.07
1070 0093	Demolition of Certain Bldgs., Westboro	60,000.00	28,000 00	32,000.00
1070-2300	Fisheries Management	647,439 00	641,275 80	6,163 20
1070 2304	Construction & Improvements East Sandwich, Hatchery	62,051.83	61,686 00	365 83
1070-2317	New Well-McLaughlin Hatchery	60,000.00	50,391 00	9,609.00
1070-2322	Anadromous Fish Projects * *	27,181.00	25,745.62	1,435 38
1070-2342	Fish Restoration Projects * * *	58,307 00	55,834 02	2,472 24
1070 2400	Wildlife Management	562,895 00	560,134.02	2,760.98
1070 2461	Wildlife Restoration * * *	220,898 00	219,081 04	1,816 96
1070 2502	Eastern Dove Management * * * *	3,500.00	3,500 00	
		$1,932,414 83	$1,865,291 17	$ 67,123 66

		Continuing Appropriations	Expenditures	Balance Forward
1070 2451	Damage by Wild Deer and Moose	$12,470 61	9,256 31	3,214 30
1070 9011	(a) Construction Fish Hatchery Belchertown	38 46		38 46(a)
1070 9012	(a) Lands & Waters for Fish & Wildlife	32,301 10	30,874 95	1,426 15(a)
1070 9013	Land & Water Acquisition & Development	598,294 96	91,675 64	506,619 32
		643,105 13	131,806 90	511,298 23

* * 50% Reimbursed Federal Funds
* * * 75% Reimbursed Federal Funds
* * * * 100% Reimbursed Federal Funds

(a) Expiration Date 6 30 71

SUMMARY OF FISH AND GAME INCOME

Fishing, Hunting and Trapping Licenses	$1,626,532.05
Special Licenses, Trap Registrations and Tags	7,293.65
Archery Stamps	5,357.80
Rents	4,557.75
Miscellaneous and Sales	5,770.30
Court Fines	11,472.00
Refunds Prior Year	1,434.06
Pittman-Robertson Federal Aid	201,440.81
Dingell-Johnson Federal Aid	95,749.22
Anadromous Fish Projects Federal Aid	13,262.34
Mass. Mourning Dove Reimbursement	3,500.00
Reimbursement for Services	1,758.86
Const. & Improvements - Reimbursement	100,000.00
	$2,078,128.84

TRANSFERS TO INLAND FISHERIES AND GAME FUND

Gasoline Tax Apportionment	$256,658.03
Surplus in Inland Fisheries & Game Fund as of June 30, 1971	328,965.13

ANALYSIS OF SPECIAL LICENSES

TYPE OF LICENSE	NUMBER ISSUED	RECEIPTS
TRAP REGISTRATIONS:		
Initial	116	$ 116.00
Renewal	285	285.00
Duplicate	1	.50
FUR BUYERS:		
Resident	19	190.00
Non-Resident	3	60.00
TAXIDERMIST:	90	450.00
PROPAGATORS:		
(Special Fish)		
Initial	13	65.00
Renewal	177	531.00
(Fish)		
Initial	7	35.00
Renewal	80	240.00
(Birds & Mammals)		
Initial	123	615.00
Renewal	435	1,305.00
(Dealers)		
Initial	2	10.00
Renewal	79	237.00
Additional	422	422.00
(Indiv. Bird or Mammal)		
Initial	40	40.00
Renewal	74	37.00
SHINERS FOR BAIT:	151	755.00
(1 duplicate)		.50
FIELD TRIAL LICENSES:	4	40.00
QUAIL FOR TRAINING DOGS:		
Initial	36	180.00
Renewal	66	198.00
COMMERCIAL SHOOTING PRESERVES:	13	650.00
TRAPPING OF CERTAIN BIRDS:	1	5.00
MOUNTING PERMITS:	4	4.00
TAGS		
Game	5,053	
Commercial Shooting	1,200	
Quail	200	
Posters	900	367.65
Fish	15,500	155.00
FIELD TRIAL PERMITS:	30	300.00
		$ 7,293.65

Freshwater Fish Records

FRESHWATER FISHING RECORDS FROM JULY 1, 1970 TO JUNE 30, 1971

Species	Weight	Length	Girth	Place Caught	How Caught	Date	Caught by
LM Bass	10 lb. 11 oz.			Sampson Pd., Carver		12/31/70	Bronislaw Kislowski, Brockton
SM Bass	5 lb. 8 oz.	21″	16″	Billington Sea, Plymouth	spinning	4/23/71	Peter Palavanchi, Plymouth
N. Pike	18 lb. 12 oz.	39½″	18½″	Cheshire Res.	ice tackle	2/21/71	John LaFlam, Florence
Pickerel	7 lb. 12 oz.	29″	22″	Assabet River	spinning	6/ 1/71	Ronald Bouley, Waltham
R. Trout	7 lb. 8 oz.	24½″	15¾″	Shubael, Barnstable		4/17/71	John St. Croix, Medford
Brown Trout	8 lb. 14 oz.	25″	17″	Middle Pd., Southwich	trolling	5/ 2/71	Chester LaPlante, Westfield
L. Trout	13 lb. 6 oz.	33″		Quabbin, Pelham	trolling	4/17/71	Alan Storm, Gardner
Shad	8 lb. 8 oz.	28″	17″	North R., Hanover	spinning	5/ 6/71	Richard C. Brown, Norwell
Channel Catfish	7 lb.	25″	14″	Warner Bk., N. Hadley	live bait	5/12/71	John Wise, Sunderland
Walleye	8 lb. 1 oz.	28¼″	17¾″	Connecticut River	spinning	4/28/71	Chester Skowron, Turners Fall
Bluegill	1 lb. 4 oz.	11″	10½″	Ashley's, Brockton	casting	4/22/71	Ralph Smith, Brockton
Bullhead	1 lb. 10 oz.	15 1/8″		Mashpee-Wakeby	live bait	11/ 3/70	E.B. Meslin, Johnston R.I.
Calico	2 lb. 9 oz.	18″	13½″	Savory's, Manomet	ice tackle	1/24/71	Charles Godin, Manomet
W. Perch	2 lb. 12 oz.	17″	13″	Herring, Plymouth	trolling	5/21/71	Manuel P. Souza, Dartmouth
Y. Perch	1 lb. 12 oz.	17″	9¾″	Coonamesset River	ice tackle	2/14/71	Ronald Jatrinski, Clinton
Brook Trout	3 lb. 12 oz.	20¾″		Deep Pd., Falmouth	spinning	9/11/70	Louis Carvalho, Jr. Dartmouth
Salmon	8 lb. 1 oz.	26″	16″	Quabbin, Pelham	trolling	5/26/71	Raymond C. Wier, Wellesley

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS
Through June 30, 1971

Species	Weight	Length	Girth	Place Caught	How Caught	Date	Caught by
M Bass	12 lb. 1 oz.	25¾''	21¾''	Palmer R., Rehoboth	bait casting	5 / 9 / 63	George Pastick, Fall River
M Bass	6 lb. 12 oz.	21''		Pleasant Lk., Harwich	spinning	5 / 14 / 67	Thomas Paradise, Arlington
. Pike	24 lb. 8 oz.	45½''	22''	Onota Lk., Pittsfield	live bait	1 / 13 / 67	Kris Ginthwain, Pittsfield
ickerel	9 lb. 5 oz.	29½''		Pontoosuc Lk., Lanesboro		/ 54	Mrs. James Martin, Stockbridge
. Trout	8 lb. 4 oz.	26''	16''	Deep Pd., Falmouth	live bait	10 / 15 / 66	Roger Walker, Eastondale
rown Trout	19 lb. 10 oz.	31½''	22 5 / 8''	Wachusett Res., Boylston	spinning	5 / 19 / 66	Dana DeBlois, Sterling
. Trout	13 lb. 6 oz.	33''		Quabbin Res., Pelham	trolling	4 / 17 / 71	Alan Storm, Gardner
had	8 lb. 8 oz.	28''	17''	North R., Hanover	spinning	5 / 6 / 71	Richard C. Brown, Norwell
hannel Catfish	13 lb. 8 oz.	30''	19''	Conn. R., Turners Falls	live bait	7 / 18 / 64	Robert Thibodo, Northampton
Valleye	9 lb. 3 oz.			Assawompsett Pond, Lakeville	bait casting		William Spaulding, Whitman
luegill	1 lb.	11¼''	9½''	Bog Pd., Norton	spinning	10 / 17 / 65	Robert Barrett, Stoughton
ullhead	5 lb. 9 oz.	22½''	11½''	Conn. R., Hadley	live bait	6 / 8 / 63	Mrs. Erna Storie, Chicopee Falls
	5 lb. 8 oz.	22½''	14''	Leverett Pd., Leverett	live bait	8 / 2 / 65	Stephen Brozo, Amherst
	4 lb. 9 oz.	22½''	11½''	Conn. R., Chicopee	live bait	9 / 8 / 65	Joseph Kida, Chicopee
alico	2 lb. 9½ oz.	18''	14''	Merrimack, Lowell	spinning	6 / 8 / 65	George Olsson, Lowell
	2 lb. 9 oz.	18''	13½''	Savorys Pd., Manomet	ice tackle	1 / 24 / 71	Charles Godin, Manomet
V. Perch	2 lb. 12 oz.	17''	13''	Herring Pd., Plymouth	trolling	5 / 21 / 71	Manuel P. Souza, Dartmouth
. Perch	2 lb. 5 oz.	17¾''	12''	Wachusett Res., Boylston	spinning	4 / 23 / 70	Arnold Korenblum, Marlboro
rook Trout	6 lb. 4 oz.	24''	14''	Otis Res., Otis	spinning	6 / 24 / 68	Thomas Laptew, Granville
almon	8 lb. 1 oz.	26''	16''	Quabbin Res., Pelham	trolling	5 / 26 / 71	Raymond C. Wier, Wellesley

Massachusetts Freshwater Fish Awards Program

DURING fiscal 1971 the Department of Commerce and Development continued to give the Division and the freshwater fishermen of Massachusetts the backing needed to make the Freshwater Fish Awards Program a success.

This year salmon were added to the 16 other categories. For the present, landlocked salmon over five pounds will be recognized as eligible for the competition. Hopefully Atlantic salmon will be entered as another category in the near future when the Division's Connecticut River salmon restoration program bears fruit.

During fiscal 1971 the standing all-time records for lake trout, shad and white perch were broken (See listings).

The standing all-time records run on a fiscal year basis, ending June 30.

The award plaques end at the close of the calendar year and are presented at the New England sportsmen's show in late January or early February.

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MASSACHUSETTS DIVISION OF FISHERIES AND GAME

Wildlife Needs Wetlands

ANNUAL REPORT 1972

GOVERNOR
FRANCIS W. SARGENT

Director
JAMES M. SHEPARD

DIVISION OF FISHERIES AND GAME

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Sudbury

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COMMONWEALTH OF MASSACHUSETTS

Division of Fisheries and Game
107th Annual Report

His Excellency, Francis W. Sargent, Governor of the Commonwealth, the Executive Council, the General Court and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the One Hundred and Seventh Annual Report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1971 to June 30, 1972.

James M. Shepard, Director

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Wetlands are more than vital to wildlife — they are the very foundation on which this resource is built. Drain a swamp and you directly drain our wildlife resource. The widespread argument that "the animals will just go somewhere else" underscores the ignorance of nature so prevalent in our society. During fiscal 1972 the Fish and Game Division succeeded in its two-year effort to obtain a $5 million bond issue for the purchase and permanent protection of key wetland areas. This is just the first step. The real work remains to be done; it must come through meaningful protective legislation — something that we currently do not have. Wetlands are difficult to develop but because we have exploited much of our upland wildlife habitat we are now steering our bulldozers into these wet islands of wilderness. Time is running out for wetlands and our wildlife.

THE COVERS: 1. A ruffed grouse drums on log; 2. a red fox pup at den. (photos by Jack Swedberg).

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2M-6-73-082674 Estimated Cost Per Copy: $.64

The Board Reports

Board members pictured above are: Top row, left to right — Roger D. Williams, Chairman; Bradlee E. Gage, Secretary. Bottom row, left to right — Martin H. Burns, Kenneth F. Burns, Harry C. Darling.

At the 1971 waterfowl hearing the five-man Fish and Game Board voted to accept the waterfowl biologists' proposal for a three-year experimental zoned season. A season of this nature is designed to provide hunting in each zone at the most favorable time without allowing excessive harvest. The season should go a long way toward providing the inland and coastal waterfowlers a common meeting ground in a conflict that has existed for many years.

One of the highlight's of this year's activities was the deeding of a 162-acre parcel to the Division of Fisheries and Game by the Western Massachusetts Electric Company (Robert E. Barrett Jr., President) in the name of Northeast Utilities. The land, to be known as the Pauchaug Brook Fish and Wildlife Management Area, is located along the Connecticut River.

Quabbin Reservoir continues to smash state fishing records, and Division fisheries personnel continue to closely monitor the pulse of one of the most productive and important freshwater fisheries in the state. The success of the existing fishery at Quabbin is due in large measure to superb cooperation that has been possible between the Division of Fisheries and Game and the MDC.

After exploring all possible sources of revenue the Fish and Game administration elected to increase license fees. There was virtually no other choice if existing programs and services were to be maintained at their current levels. The last increase in any license fee had come in 1960. Inflation in addition to an expanded operation had, over the last decade, stretched the Division's financial resources to the breaking point.

Regional meetings were held in the hope that the Division and sportsmen could work together to develop a program for increased revenue that would answer the Division's needs and, at the same time, satisfy the sporting public. The Division advocated "user fees" in the form of a trout & pheasant stamp.

On September 10 the Board held a regulatory hearing and made a decision that permitted fisher to be trapped November 1 to March 1; the beaver season was moved back one month — now November 15 to March 1.

Archery season for deer was extended from two to three weeks. A muzzle-loading deer season was rejected because of a conflict in legal definitions between smooth-bores and rifled muzzle-loaders.

The Division's waterfowl section has embarked on an imprinting program at the Ayer Game Farm. "Imprinting" refers to a process in the early stages of a duckling's development through which it forms an association bond with parent and immediate surroundings. The program could result in a significant increase in ground nesting ducks using a structure off the ground to help reduce nest predation and increase numbers of birds nesting on a pond.

On October 6, 1971, Governor Francis W. Sargent signed into law one of the most important bills in the history of the Division of Fisheries and

State Library of Massachusetts
State House, Boston

Game. Known as the "Permanent Protection Wetlands Bill," the legislation provided $5 million to purchase inland and coastal wetlands. The passage of this bill was made possible by a concerted effort over the past two years by Division personnel, conservationists, sportsmen and key members of the Legislature.

The Board voted down an extension of the trout season for this year but did vote to increase the daily limit of kokanee salmon in Onota Lake from two to five; the former 15-inch kokanee limit was abolished.

The Board established a smelt season by hook and line on Quabbin and Onota to help control smelt numbers and, at the same time, increase the recreational potential of the two bodies of water. The drop in the daily bag limit on salmonids from 10 to five should result in an increased population of these smelt-controlling fish.

The Board changed the daily bag limit on trout from 12 of any length to 12 with only six of the 12 10 inches or greater in length.

Finally, the Board established two experimental fly fishing only areas — one on the Swift River in Belchertown, the other on the Nissitissit in Pepperell.

The Board was disappointed that the first paraplegic hunt had to be cancelled for want of a suitable area in which to conduct it. Hopefully Division biologists can locate a new area next year.

The Board held its January 1972 monthly meeting as guests of the Sherman Exposition at the New England Sportsmen's Show, Hynes Auditorium at Boston's Prudential Center. At the same time the Board was able to tour the Division's exhibit on wild turkey and also view choice Fish and Wildlife Museum pieces displayed by Commerce and Development in cooperation with the Fish and Game Division.

An especially important milestone this year was the agreement with Holyoke Water Power Co. on fisheries management for the Connecticut River. The firm agreed to enlarge present fish passage facilities over its dam and to continue work on the program with mutually accepted methods and goals for handling increased fish runs.

Respectfully submitted,
Roger D. Williams, Chairman
Bradlee E. Gage, Secretary
Harry C. Darling
Kenneth F. Burns
Martin H. Burns

LEGISLATION

Chapter

125 — An Act Further Regulating The Transfer Of Protected Species Of Fish, Birds And Mammals And Exempting Certain Zoos From The Law Prohibiting The Sale, Possession Or Importation Of Such Species.

127 — An Act Protecting The Gray Wolf, Giant Otter and All South American Otters Of The Genus Lutra.

135 — An Act Authorizing Shooting On Commercial Shooting Preserves On Certain Sundays.

221 — An Act Authorizing Certain Enforcement Officers To Enter Upon And Pass Over Private Lands In The Performance Of Their Duties Relative To The Fish and Game Laws.

223 — An Act Further Regulating The Procedure For Importing Inland Fish and Wildlife Into The Commonwealth.

261 — An Act Further Regulating The Discharge Of Firearms Within A Certain Distance From Buildings.

322 — An Act Designating The Montague State Fish Hatchery In The Town Of Montagne As The Bitzer State Fish Hatchery.

416 — An Act Authorizing The Division Of Fisheries And Game To Lease Certain Land In The Town Of Paxton To Said Town.

422 — An Act Providing For An Annual Deer Hunt For Paraplegics.

445 — An Act Relative To Hunting Certain Birds of Prey.

FISHERIES

After being tagged by Division fisheries biologists a Quabbin lake trout returns to his element.

photo by Jack Swedberg

During the 1972 fiscal year, fisheries research and management programs continued in warm water fish studies, development activities and special study projects on pesticides, the Northfield Mountain Pumped Storage Project, and the Bear Swamp Pumped Storage Project.

Anadromous Fish Restoration

The bulk of this Division's anadromous fish investigations continue to emphasize the restoration program for American shad and Atlantic salmon in the Connecticut River. Negotiations were completed with the Holyoke Water Power Company for expanded fish passage facilities at the Holyoke dam. A settlement agreement was signed by the company and directors of the fish and game agencies of Massachusetts, Connecticut, New Hampshire and Vermont and forwarded to the Federal Power Commission. The agreement provides enlargement and modification of present lift facilities to a capability of passing 1,000,000 American shad and 40,000 Atlantic salmon.

The extremely wet and cold spring of 1972 exerted a negative influence on the shad fishery at Holyoke. Creel census data indicates that both the shad catch and fishing effort were down to about half of the 1971 level, although the catch per unit effort did not differ greatly from previous years. Approximately 6,802 shad were creeled by 8,000 fishermen during 21,252 hours of angling. Since the population of shad entering the river was not significantly lower than recent years, it is felt that the decrease in the sport catch at Holyoke is more a function of less fishing effort due to inclement weather rather than any significant decrease in fish availability.

High water emanating from the dam spillway throughout most of the run prevented many shad from entering the fishlift. Subsequently, only 25,473 shad were passed, as opposed to 52,273 in 1971 and 65,751 during 1970. Apparently, many of the fish that failed to find the fish elevator dropped downstream and commenced spawning. More than 12,600,000 fertile shad eggs were obtained in the section of the river between Willimansett and Massachusetts Turnpike bridges. This figure represents a three-fold increase in the best previous take of 4,000,000 obtained during 1970. These eggs were planted in a cooperative effort with the Massachusetts Division of Marine Fisheries and the New Hampshire Department of Fish and Game, into the Charles, Taunton, Agawam and Merrimack Rivers, as part of an intensive effort to restore their once-existing shad runs. Attempts to induce artificial spawning of shad through the use of various hormones were unsuccessful.

In the Merrimack River the emigration of juvenile shad resulting from fertile egg transplants has been documented for the past three years. Yet it will still be a few years before any significant numbers of adult shad are expected to return to the river.

The Palmer Hatchery produced 8,300 Atlantic salmon smolts for the Connecticut River program. All these fish were released via the recently constructed salmon stockout pond located on the Salmon River in Connecticut.

The southeastern Massachusetts shad investigation revealed that the sport fisheries of both the Palmer and the North Rivers were down about half of the previous year's level. The Palmer River yielded 143 shad to 731 anglers fishing 1,767 hours, while the North River yielded 222 shad to 963 anglers fishing 2,443 hours. However, as with the Connecticut River, the catch per effort was not significantly different than that experienced in recent years.

The Division also provided assistance to the Division of Marine Fisheries coho program by rearing these fish to the smolt stage at the Palmer Hatchery.

Coldwater Fish Investigations

The trout and salmon hatching and rearing program continues to provide the basis for the coldwater fisheries program. The coldwater fish investigations continue to evaluate our salmonid management practices. Basically, this involves a continual survey of our coldwater resources in the formulation of policies designed to generate the most equitable and practical distribution of our hatchery trout. The annual Quabbin Reservoir creel census, conducted from April to October, indicates the harvest of landlocked salmon and lake trout dropped considerably to 234 fish and 540 fish respectively, while rainbow and brown trout harvest remained relatively stable at 4,521 and 52 fish respectively. However, 70,665 anglers took an estimated 94,205 fish weighing 72,428 lbs. These figures show a significant increase in the use of the reservoir compared to the previous year when 60,231 anglers landed 70,939 fish weighing 53.293 lbs.

The smelt population continued to expand. Smelt utilization by salmonid predators ranged from 70-80% throughout the entire year. To minimize water distribution problems, 50,000 adult spawning smelt and 30,000,000 eggs were shipped from the Quabbin to neighboring states of Connecticut, Vermont and Rhode Island; in addition, smelt eggs in nine brooks were treated with a total of 400 lbs. of copper sulfate and 50 lbs. of caustic soda. The screening study conducted by the engineering firm of Camp, Dresser & McKee was approved with plans made for screen installation in 1973.

During the year, the reservoir was stocked with

Above: fisheries crew applies rotenone to a Massachusetts pond; below — processing fish sample.

100,000 lake trout fry, 26,000 landlocked salmon, and 9,200 catchable rainbow trout.

The final year of creel census study at Littleville Reservoir was completed. The data indicates that 11,495 anglers harvested 5,477 trout weighing 3,046 lbs. An additional 536 warmwater fish weighing 119 lbs. were also creeled, while 215 trout and 2,071 warmwater fish were reported as being released. Total fishing pressure amounted to 137.7 hours per acre producing approximately 11.5 lbs. of fish per acre. The unauthorized introduction and subsequent establishment of smelt in Littleville Reservoir precludes any attempt to establish kokanee salmon at this site. Littleville Reservoir will continue to be managed as a two-story fishery.

During August and early September of 1971, the temperature profile and vertical distribution of dissolved oxygen was determined for 32 ponds. Fourteen ponds were found to contain a volume of trout water in accordance with Massachusetts standards (70° F. or less in temperature and containing 5 ppm or more of dissolved oxygen or greater than 10 percent of the pond's volume). The pond volumes comprised of definable trout water ranged from trace amounts to 54 percent.

Massachusetts Salmonid Distribution from
State and Federal Hatcheries

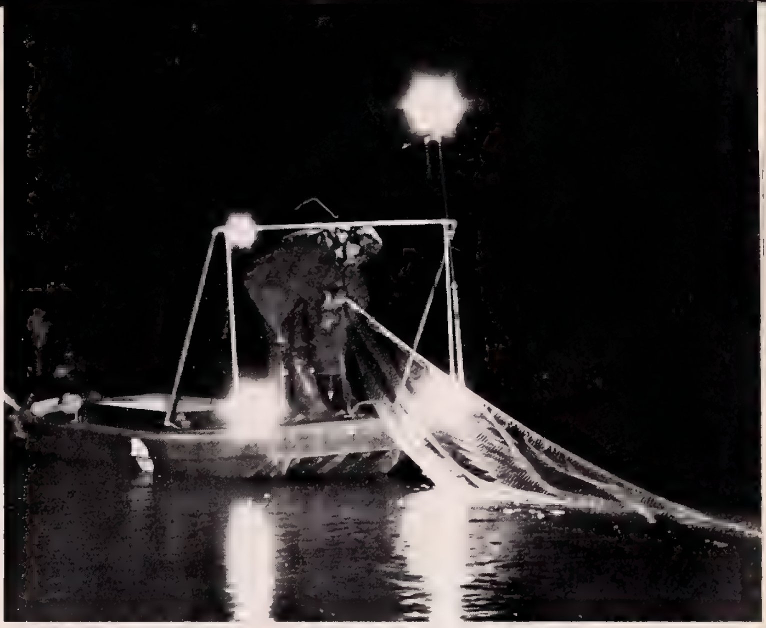
	Brook Trout	Brown Trout	Rainbow Trout	Total
State	262,300	135,450	665,500	1,063,250
Federal	42,000	43,000	900	85,900
				1,148,150

Total trout distributed	6"-9"	290,250
Total trout distributed	9" plus	646,150
Total Federal trout	6" plus	65,900
Total catchables	6" plus	936,400
Total fingerlings	6" minus	212,750

Hatchery Poundage

Hatchery	Total Lbs.
Charles L. McLaughlin Hatchery	212,200
Montague Hatchery	87,650
Palmer Hatchery	2,100
Sandwich Hatchery	88,050
Sunderland Hatchery	123,200
Total State	513,200

	Number	Weight in pounds
Coho salmon	65,200	2,660
Kokanee salmon	40,000	23
Atlantic salmon	8,600	1,060
Landlocked salmon	10,600	530
Lake trout	49,850	121



Hauling shad on the Connecticut.

photo by Jack Swedberg

The rainbow trout/sea-run alewife forage relationship study at Higgins and Hathaway Ponds was completed. The findings indicate that young-of-the-year alewives provide very little forage for rainbow trout. Furthermore, the total biomass of trout in ponds lacking alewives was greater due to lack of competition from the forage fish. The first year of study testing brown trout with sea-run alewives was initiated. Favorable results are expected from this experiment since the brown trout, once attaining the size of 9 inches, is known to use available forage fish to a much greater extent than either the rainbow or the brook trout.

The stream survey inventory segment sampled 35 of a projected 79 stations within the Chicopee River Basin. Standard biological, chemical and physical methods were employed to determine the resource potential of this watershed. All data will be analyzed and presented in final form during 1973 when the remaining 44 stations will be sampled.

The attempts to establish kokanee salmon in Onota Lake appeared to be showing some promise. In mid-November 37 individuals averaging 14½ inches were collected. Five females from this group produced 4,400 eggs while the estimated spawning population was set at 80; in addition, approximately 39,000 one-inch fingerlings were planted earlier in the year. Kokanee salmon are beginning to appear consistently in the creels of a few fishermen at Onota Lake. Angler harvest of kokanee is expected to increase when more fishermen learn how to catch this recently-introduced species.

Warmwater Fish Investigations

The presence of landlocked alewives in Congamond Lakes indicate that they have a high forage value for both cold and warmwater game species. Future plans include the introduction of these fine forage fish into other selective waters throughout the state.

The northern pike population in Cheshire Reservoir is still expanding with this year's harvest of 988 lbs. providing a 36 percent increase over the 1971 catch. However, the fishing pressure was also significantly up over recent years. The largest pike checked by creel census agents measured 40.3 inches and weighed 17.9 lbs. Scale analysis revealed that this fish was six years old. Further scale analyses of other pike taken from the reservoir indicate that these fish attain a minimum harvest length of 20 inches prior to their third year. The recommendation to raise the minimum legal length of northern pike from 20 to 25 inches is currently being considered. It is felt that action along these lines would insure that a creeled pike had spawned at least once prior to being harvested.

The inability of fish dealers in Minnesota to supply us with approximately 3,000 yearling pike, unfortunately postponed for another year the stocking of this species into Brimfield Reservoir.

The post-treatment evaluation of the use of sodium arsenite for weed control on 269-acre Billington Sea in Plymouth was completed. The application of 6,000 gallons of this herbicide apparently affected the adult population structure of most pan and rough fish. The scarcity of invertebrates after application temporarily suppressed the growth rates of fish that normally would have utilized the benthic organisms during the year of treatment. The following post-treatment year saw a return to more normal conditions with respect to fish growth rates and invertebrate production, while the loss of adult fish was replaced with subsequent growth of juveniles.

During May through November, 35 ponds were sampled to determine warmwater angling potential. The majority of the ponds sampled contained from 11 to 30 percent game fish by weight of the total population. Only five of the ponds contained less than 10 percent game fish by weight.

A fisheries biologist displays kokanee salmon taken from Onota Lake, Pittsfield.

A study which hopefully will provide a basis for estimating the existing standing crop of fish in a pond based upon water chemistry parameters should be completed within the next year, while the pesticide investigations have drawn the following conclusions: the amount of DDT residues found in the environment has apparently stabilized in spite of the DDT ban in this state. Levels are expected to remain constant for many years due to the non-biodegradable nature of this compound. The only other hard pesticide found consistently throughout the state was Dieldrin, its highest concentrations were found in the vicinity of fruit orchards and cranberry bogs.

Polychlorinated biphenyl (PCB) residues were found in 14 rivers as compared with nine the previous year. These industrial pollutants are expected to increase further since, like DDT, they concentrate in food chains and have many paths

Right: four steps in landlocked salmon management — capturing, stripping, tagging, releasing.

photos by Jack Swedberg

into the natural environment. A study was conducted of the high PCB residue levels in the Housatonic River at Pittsfield. The source was located and the situation was corrected. Investigations on the use of freshwater mussels as indicator organisms of pesticide contamination were continued. Although all the data has yet to be completely analyzed it looks as though mussels can be used as indicators of pollution; however, they do pose certain limitations. Their physical requirements and filtering habits appear to make them more appropriate as qualitative rather than quantitative indicators.

Pumped Storage Power Process Investigations

Pre-operational studies to determine the environmental impact of the Northfield Pumped Storage Project on the fisheries of the Connecticut River went into the second year of the investigation, while similar studies concerning the effect of the Bear Swamp Pumped Storage Project on the upper Deerfield River were initiated. Both of these investigations are financed by the Northeast Utilities Service Company and New England Power Company respectively. Biologists are assembling and analyzing data concerning resident fish species complex, creel census, diversity of benthic organisms and water quality parameters.

Massachusetts Cooperative Fishery Unit

Five investigations were financially supported by the Division of Fisheries and Game through the Cooperative Fisheries Unit located at the University of Massachusetts in Amherst. Three of these projects are related to the anadromous fish investigations concerning the migration, behavior, and spawning activities of adult and juvenile shad in the Connecticut River, while another investigation dealt with the effects of mercury deposition and its effects of early development on the white sucker. The last project related the abundance and growth of fish from polluted and non-polluted segments of the Ware River drainage.

Respectfully submitted,
Colton H. Bridges, Superintendent

photo by Jack Swedberg

photo by Bill Byrne

WILDLIFE

Introduction

The wildlife research program has many facets. For example, the dove and quail surveys are concerned with monitoring the general status of breeding populations, while the objective of the gosling transplant program is to establish breeding populations in uninhabited but suitable range. The deer study is tied closely to an examination of the population biology of the herd, the end product being sound deer harvest recommendations. Still another avenue of research is the kind and degree of use by sportsmen and the non-hunting and fishing public on Division-owned lands.

GAME DISTRIBUTION

July 1, 1971 to June 30, 1972

PHEASANT LIBERATIONS:	
August	4,497
October — November	39,908
Sportsmen's Club Rearing Program	6,712
Miscellaneous (Youth Hunt, displays, experiments, etc.)	466
Brood Stock (Spring Releases)	3,878
Hybrids	565
Field Trials (35)	1,350
TOTAL	57,376
QUAIL LIBERATIONS:	
Public Hunting Grounds	3,368
Field Trials	400
TOTAL	3,768
HARE LIBERATIONS	
Released in January & February	2,500
TOTAL	2,500

The dividing line between game research and game management is difficult to define in many cases. Frequently research and management activities are indistinguishable. The case of waterfowl banding to evaluate population levels, mortality rates, or the effects of certain management operations is an example. Habitat manipulation and a determination of its effects on game populations is both research and management.

The Division of Fisheries and Game is involved intensively in both of these broad areas of concern. The annual summaries of project activities that follow will illuminate the extent to which the state's wildlife resources are being nurtured, studied and evaluated.

Statewide Beaver Harvest

A total of 1,358 beaver were trapped in 93 towns by 94 trappers during the 1971-1972 beaver season. This catch is 849 more than in 1970-71 and 352 more than a ten-year (1962-1971), 1,006 — beaver average. Berkshire, Franklin and Hampshire counties together yielded nearly three-fourths (73%) of the season's harvest. More than half (53.2%) of the beaver trapped were taken in December. The Conibear trap was used to take 912 beaver (67.1% of harvest). The average price of a Mass. beaver pelt was $17, yielding a total harvest valuation of $23,086 — the highest valuation recorded in 16 years.

Mourning Dove Census

Calling doves were counted on three randomized census routes in cooperation with the U.S. Fish & Wildlife Service's annual mourning dove breeding population census. An increase occurred on all three routes censused. The total increase from 1971 counts was 33 percent.

Spring Quail Census

The 1971 spring quail census in Barnstable, Bristol and Plymouth counties was comparable to the 1969 average and a four-year (1958-1961) average. Comparison of call indices indicates the possibility of an increasing quail population. This trend is especially evident in Bristol County. However, decreases in the number of routes surveyed have reduced the sample size to the point where the analysis of call indices does not reflect any but gross changes.

White-tailed Deer

The antlerless deer permit system was continued for the fifth consecutive year. Permits issued totaled 7,270 in the following categories: Farmer-landowner — 270; Nantucket Island — 400; Martha's Vineyard — 600; Sportsmen — 6,000. The total deer harvest was 2,284 (2,405 in 1970) of which 36 were taken by archers. Of 2,248 deer harvested during the shotgun season, 1,872 were taken on the mainland, 163 were taken on Nantucket, and 213 were taken on Martha's Vineyard. The sex composition of the harvest was 1,359 males and 889 females. Permit holders accounted for 1,314 deer during the shotgun season; 425 of these were males (including 253 button bucks). The success rate of antlerless deer permit holders was 1 in 6 for Farmer-Landowner and Sportsmen permittees; 1 in 4 for Martha's Vineyard permittees and 1 in 3 for Nantucket Permit holders.

A decrease (compared to 1970) of 208 adult males was noted in the 1971 harvest, while the harvest of female deer increased by 125 animals (shotgun season only). Future management efforts will be directed toward expanding the size of the breeding population via the permit system to reverse this harvest trend.

Reported non-hunting deer mortalities totalled 694 deer; 320 males, 341 females, and 33 deer of which the sex was not reported. Motor vehicles accounted for 373 deaths, dogs 219, illegal kills 39, fences 7, drownings 6, trains 5, unknown causes 41, and deer taken because of crop depredations 4. Six hundred ninety-eight non-hunting mortalities were reported in 1970.

Berkshire, Barnstable and Franklin counties accounted for 50.7 percent of the reported non-hunting mortality (25.2, 13.4 and 12.1 percent respectively). The reporting rate was greatest in the months of March (17.7%), February (15.4%) and November (12.1%).

Sixty-three female deer were examined between the period 1 January through 31 May 1972 to determine the reproductive rate of the herd. The data collected agreed statistically with data collected over the past six breeding seasons. A summary of these data for the years 1966 to 1972 is shown in the table:

Age	Sample Size	Reproductive Rate
Yearling	158	0.27 fawns per doe
Two years	84	1.39 fawns per doe
Over two years	181	1.74 fawns per doe

Seven of 21 yearlings examined in 1972 were pregnant. Five fawns were identified and the remains of embryonic structures in two other animal's were found. Eleven two-year-old does examined were carrying a total of 17 fawns. Thirty-one does three years of age or older were included in the sample. Twenty-six of these were pregnant and collectively were carrying 49 fawns. These data indicate the importance of older-aged does in the population. In this sample, older-aged deer (49 percent of sample) produced 67 percent of the fawns. Our statistical tests indicate that the road-kill sample of does from which the reproductive data are derived is similar in age composition to the data derived from the deer season harvest of does, and therefore, should be fairly representative of the reproductive characteristics of the herd.

Hunter Utilization of Wildlife Management Areas

Total estimated hunter effort on fourteen wildlife management areas was 33,622 hunter trips. This is a decrease of 1.9% from the 1970 effort.

Peak usage occurred on the first Saturday, followed by the second Saturday and opening day. Usage on a weekday after stocking was approximately 1.6 times that of a weekday after no stocking.

Local hunters continue to be the heaviest users of wildlife management areas, although on peak days hunters in the 3,280 kilometer range predominated on three areas (Crane, Myles Standish, Northeast.)

Game bag information was collected on six areas. On the five state areas, 1,943 hunters were contacted of whom 631 (32.5%) had taken at least one unit of game. Known harvest on these five areas totaled 889 animals of nine species. Pheasant (771 or 86.7%) comprised the majority of the harvest.

Hunter success was greatest on days after stocking (41.7%), followed by opening day (37.1%), Saturdays (31.3%), and days after no stocking (17.9%). Hunter competition on peak days probably lessens the sportsman's chance of success on those days. Hunter success percentages for all five areas were greater in 1971 than in 1970. Greatest success was found at Winimusset (44.4%), followed by Crane (41.4%), Housatonic Valley (32.1%), Northeast (29.8%), and Swift River (23.6%).

Black Bear Population Dynamics

Applications for bear hunting permits were received from 200 sportsmen. None, however, succeeded in taking a bear during the legal season.

Sixteen reports, involving 28 bear, were received from cooperators. Reports by county were as follows: Franklin (6), Berkshire (5), Hampshire (3), Hampden (1), Worcester (1).

Gosling Transplant Program

Three transplants of Canada goose goslings were made from the Southboro-Framingham area in 1971. A total of 59 goslings were transplanted in central and western Massachusetts of which 48 were banded with orange and black plastic leg bands in addition to standard Federal bands. A total of 60 goslings, 7 yearlings and 22 adult Canada geese captured by drive trapping were banded.

During the spring of 1971, one color-marked goose was observed during spring migration in the company of a large flock of unmarked geese on Cheshire Reservoir.

A pair of geese of which the female was color marked nested at Adams Pond, Oakham. It is not known if the nest was successful. A pair of color-marked geese did hatch off seven goslings on Creek Pond in Otis.

During the spring of 1972 the same female apparently returned with an unmarked male and hatched 6 goslings. Three pairs of geese of which one bird was color marked were observed in Sandisfield. It is not known if the geese nested successfully. Two pairs of geese nested successfully on the Quabbin Reservoir; one pair was known to be color marked.

Winter Trapping Program

Coastal Trapping. Extremely mild winter conditions hindered coastal trapping. Normally birds respond well to bait trapping when conditions become severe enough to regularly freeze over the tidal flats, thus limiting a ready supply of mussel and other marine organisms. This did not happen during the winter of 1971-1972. Success on inland sites was also limited by poor ice conditions which prevented or hindered cannon netting on some areas.

State personnel, along with three cooperators, banded a total of 1,426 ducks at 27 locations using bait traps and/or cannon nets. Six hundred nineteen (619) ducks were banded as part of the regular winter black duck trapping program. Black ducks made up 77.1 percent of the total; mallard x black hybrids 11.1 percent and mallards 7.4 percent. The park mallard winter banding program netted 613 mallards, 135 mallard x black hybrids, 42 black ducks, 13 mallard x domestic hybrids and 4 other species. Thirteen (13) hand-reared mallard x black hybrids were also banded and released at Norumbega Park, Auburndale.

Preseason Waterfowl Banding

A total of 1,211 waterfowl and marsh birds were banded during the period from March 18 to October 15. The number of birds banded by various techniques is as follows: airboat nightlighting — 496; bait trapping — 384; cannon netting — 109; drive trapping — 95; nest box trapping — 70; released hand-reared ducks — 54; and hand-captured ducklings — 3.

Wood ducks made up 28.4 percent of the total, mallards, 27.9 percent; black ducks, 11.0 percent; Canada geese, 7.8 percent; American coot, 4.0 percent; blue winged teal, 1.7 percent and miscellaneous species made up 12.9 percent of the total. In addition to the banding of waterfowl, blood smears were taken from 485 birds and sent to Dr. Gordon F. Bennett of Memorial University of Newfoundland, St. John's, Newfoundland, Canada for processing. The program will be continued in 1972 after which the results will be analyzed and conclusions drawn concerning blood parasite infestation levels.

Winter Inventory Flights

Winter inventory flights were made on January 4 and 6, 1972. Coastal Massachusetts, from the New Hampshire line to the Rhode Island line was surveyed. The total waterfowl count was 131,364 of which 24,578 were black ducks. The black duck count was up 174.6 percent from 1971 and 4.5 percent from the ten-year average. Canada geese (14,339) were up 87.5 percent from 1971 and 75.1 percent from the ten-year average. All other species were above the 1971 count and all but sea ducks were above the ten-year average. The increases can probably be attributed to an exceptionally mild winter as is evident from the comparatively large number of green-winged teal and American coot seen during the January flight.

Monthly fall flights showed the effect of Massachusetts' experimental waterfowl zoning seasons. There was an unusual buildup of black ducks in November before the coastal waterfowl season opened with numbers during the December flight falling near normal.

Black Duck Imprint Program

Fifty-six black duck eggs were received from the Delaware Department of Fish and Wildlife in May of 1971. Forty-five of these eggs were hatched at the Sandwich Game Farm and the ducklings reared by Ayer Game Farm personnel. Forty-four ducklings were raised to maturity. A 75 by 80-foot pen with a 45 by 50-foot pool was constructed during the summer of 1971. The ducklings were placed in the pen at eight weeks of age and held over winter. Ducks were segregated into two sections of the pen, apparent pure-strain black ducks in one half and questionable types (possible mallard blood) in the other. Thirteen questionable drakes were released and only males with typical black duck characteristics were kept for breeding. Thirteen drakes and 19 hens were retained for breeding. The breeding stock was supplemented by coastal-trapped wild black duck hens.

These birds laid a total of 172 eggs of which 132 hatched. Ducklings were brooded in nesting cylinders for 24 hours after hatching and then moved to brood pens. Upon reaching four weeks of age ducklings were moved from the brooders at Sandwich Game Farm to the Ayer Game Farm. They will be held over winter and released on selected areas during the spring of 1973.

Wood Duck Nesting Study

Wood duck production on the Great Meadows National Wildlife Refuge increased slightly for the second year in a row with 60 ducklings being produced from seven nest attempts. Thirteen additional ducklings were hatched by a wild hen incubating game farm wood duck eggs. Production was also up slightly on SUASCO study areas with 108 ducklings produced from 14 nest attempts. One nest was destroyed by a raccoon. The abandonment of a second nest on the same area was attributed to raccoon molestation.

Production on central Massachusetts areas was down 12 percent with 372 ducklings being produced from 36 nest attempts. The major reason for the decrease is attributed to raccoon predation. At Nipmuc Pond in Mendon, an apparently undersized raccoon slipped through the predator guards of several boxes and killed three incubating hooded mergansers and two female wood ducks. It also destroyed a third nest before incubation could be started. One wood duck nested successfully in 1972 versus eight wood ducks in 1971. A raccoon was also responsible for killing an incubating hen at Bristol-Blake in Norfolk and caused the abandonment of a second nest.

Wood duck production on non-research areas was up slightly. Increases were noted on the Concord River and on a number of other areas in Middlesex and Essex County. This increase was slightly negated by an increase in nest losses due to vandalism, nest predation, storms and high water. Over half the recorded nest loss was due to raccoon activities.

Production in southeastern Massachusetts increased greatly over 1970 and 1971 with 56 nest attempts on five study areas versus 36 in 1970. Duckling production was up more than 40 percent over 1971 (502 versus 344).

Statewide, wood duck production appears to be slowly increasing. It is hoped that the Division will be able to increase its box erection and maintenance program accordingly.

Evaluation of Starling-Proof Nesting Cylinders

Wood ducks successfully nested in 11 of 69 available starling-proof nesting cylinders distributed across the state. One hooded merganser also nested successfully. A total of 101 wood ducks and 12 hooded mergansers were produced. Utilization of cylinders has increased from five nests on three areas in 1970 (59 available boxes) to 12 nests on six areas in 1972 (69 available boxes).

No starlings have been observed in the boxes since the program started although several grackle nests have been discovered.

Statewide Development

This project is concerned with the development and maintenance of wildlife management areas; the construction, erection and maintenance of wood duck nesting boxes; and the preparation of 15-year work plans for management areas.

Development consists of creating access to management areas and improving wildlife habitat. Access is created through the construction of roads and trails, parking areas and bridges. Informational and boundary signs are posted on all areas. Methods used to improve wildlife habitat are: managing forested areas through selective cutting and clear cutting; planting herbaceous seed for food and cover (i.e., millet, buckwheat, rye, switchgrass, reed canary grass, timothy, alfalfa, etc.); planting trees and shrubs; controlling noxious invading vegetation through brush cutting and application of herbicides; improving the forest understory through brush cutting to promote sprout growth and cover; and management of wetland areas by manipulation of water levels to allow growth of emergent vegetation, either natural or planted, to produce food and cover.

Maintenance is concerned with keeping existing facilities and existing developed sections in good condition. This includes: keeping buildings in good repair; painting and replanking bridges; graveling, grading, filling holes, and brush cutting roads; reposting and repairing signs; and top dressing and brush cutting fields.

Wood duck nesting boxes are checked annually to determine usage, replace broken parts, replace missing boxes, replace broken or rotten poles, and renew nest box shavings. Usually, new boxes are also constructed and erected on areas that previously had no boxes.

Below is a summation of project work for fiscal 1972.

Trails	Created 1.1 miles of new trails
Parking Lots	Constructed 3 new lots
Signs	Constructed 152 new information signs; marked 8 miles of boundaries.
Trees	Planted 200 hetzi juniper and 500 red pine
Shrubs —	Planted 2,000 multiflora rose and 500 autumn olive.
Herbaceous Fields —	Planted and maintained 401 acres of fields
Clearing —	Cleared 43 acres of forested land
Vegetation Control —	Brush cut and hand cut 268 acres and treated 148 acres with herbicide.
Timber Management —	Selectively cut 21 acres of forested land
Wood Duck Nesting Boxes —	Constructed and erected 46 nest boxes on areas that previously had no boxes.
Project Administration —	Expended 193 days; including planning, supervision, ordering materials, preparing monthly and annual reports, and project renewals.
Plans	Completed plans for the Birch Hill and Delaney Wildlife Management Areas

Maintenance:

Buildings — 8 buildings
Dams — 10 dams
Bridges — 10 bridges
Roads — 5 miles
Trails — 99.7 miles
Parking Lots — 55
Signs — 728 signs and 25 miles of boundaries
Wood Duck Nesting Boxes — 744 boxes

An airboat and high-intensity lights have proven invaluable in capturing waterfowl for studying and banding.

Mourning Dove Banding Project

The objectives of this project are to gain information on the mourning dove population in Massachusetts and to provide data on how many doves produced here are harvested by hunters in states south of Massachusetts where there are legal seasons on doves.

The 1971 mourning dove banding project was conducted from 13 July 1971 through 23 September 1971. A total of 2163 doves were banded, an increase of 123 over the 1970 figure of 2040. Doves were banded at nine sites in eastern Massachusetts by personnel of the Manomet Bird Observatory, cooperators of the Massachusetts Division of Fisheries and Game, and by personnel at Fort Devens Army Base.

The majority of doves, 2161, were captured in two foot square wire traps designed for the purpose of trapping doves; the traps are baited with cracked corn or white millet and placed on the ground in open fields. The personnel at Fort Devens built 24 new traps in 1971 with materials purchased with project funds. The remaining 62 doves were captured in nylon mist nets designed for catching wild birds.

As of July 1972 we have had twenty-two reports of doves that were banded during the 1971 project. These reports have come from the following states: Rhode Island, Pennsylvania, Maryland, Virginia, Georgia, Alabama, Florida, and Massachusetts. Fifteen of these reports are a result of hunting harvest; the remaining seven are of doves found dead or trapped alive and released after the band number was noted.

Game Farms

In an effort to reduce construction costs, employees at the Ayer Game Farm designed and constructed a new type of rearing pen, using plastic netting in place of galvanized poultry netting. This resulted in using less labor and materials, and, of particular value was its ability to withstand heavy, wet snow. In addition, annual repairs and replacements to brooder houses, buildings, rearing pens, etc. were made.

Losses due to theft at the Sandwich Game Farm were stopped when the culprit was apprehended. Over 1500 game birds were stolen at this farm but vandalism to both pens, property, and game birds was experienced at all installations.

Heavy losses by mammalian predation occurred at the Ayer Game Farm when over 1000 birds were killed.

Disease losses were moderate during this fiscal period. However, pulmonary edema or "marble spleen" — a strange disease in pheasants — still occurs in our flocks. Birds die suddenly for no apparent reason. This disease will be investigated thoroughly by the aid of the newly created Northeast Wildlife Disease Research Unit at the University of Connecticut. It is hoped that knowledge of how the disease spreads, what treatments are effective, and preventive measures will be discovered.

At the Sandwich Game Farm a new waterfowl display was constructed creating the largest waterfowl exhibit in the northeastern United States. Such species as pintail, gadwall, wood duck, hooded mergansers, shoveler, redhead, canvasback, all species of teal, blue and snow geese, mute swans, and numerous others will be viewed annually by visitors.

Forest Pheasant Project

Approximately 565 hybrids were released on Prescott Peninsula, Quabbin Reservation, and Martha's Vineyard. The releases of adults revealed poor survival on Prescott Peninsula while good results were observed on the Vineyard. Besides the problem of poor survival in forested areas, the reproduction of brood stock at the Division's game farms and the University of Massachusetts was extremely low. Studies are now underway to try to determine the cause of the low reproductive performance and to obtain information on an individual basis in order to facilitate selection of a superior population. The limited data available at this time suggests that the hybrids are later maturing than the present game farm stock.

However, due to the lack of good release sites, rearing facilities, and budgetary problems, it appears that this project should be discontinued or transferred to the University of Massachusetts' Department of Veterinary and Animal Sciences.

Massachusetts Woodcock Project

The objective of this woodcock project is to increase the available data on this species within Massachusetts as well as the present range of woodcock as part of a Federal research project on webless migratory game birds.

Seventeen randomized singing ground routes established by the Migratory Bird Populations Station were surveyed using both Division of Fisheries and Game personnel and Bureau of Sport Fisheries and Wildlife cooperators.

A total of 200 woodcock captures was made in 1971-1972 which included six recaptures and 13 repeats. This total includes two mortalities.

Division personnel concentrated their efforts on mist-netting and locating summer concentration fields. A total of 97 new birds was netted by this method. The sex ratio was 92 males to five females. Brood banding by the use of bird dogs resulted in five broods banded with a total of 11 chicks. Again, low brood capture was due to inclement weather during the peak hatching period (about May 10) in central Massachusetts. High nest losses were noted caused by nest desertion and predation. Night lighting resulted in 70 new birds banded.

Federal Aid Project W-35-R-13, Game Population Trend and Harvest Survey, Job I-1, Statewide Small Game Harvest, revealed the following important woodcock data:

1. The expanded number of hunters seeking woodcock increased by 6,200 from the reported 20,551 in 1968 to 26,727 in 1970.
2. The 1970 expanded bag take showed 67,886 woodcock harvested.

Experimental Turkey Stocking

Massachusetts turkey populations were surveyed by direct observation, track counts, and cooperator reports. Turkey populations on central Massachusetts areas (Quabbin, Barre, Douglas) declined from 1970-71. This decline was probably due to decreased winter survival following the cessation of winter feeding (1970-71), and by cold spring rains which adversely affected clutch hatchability and poult survival. Western District populations of game farm stock (October Mountain, Mt. Washington) have also declined, as a result of deliberate efforts to remove this inferior stock. In two other areas, Myles Standish Forest and the Holyoke Range, only stray birds remain.

Six turkeys (2 adult female, 3 juvenile female, 1 juvenile male) were trapped by cannon net in Hamilton's Orchards, New Salem during September 1971 and transferred to Horse Mountain, Hatfield. One adult female was killed by a dog two months later. Another cannon net shot was made during November near Underhill Brook on Prescott Peninsula. Seven turkeys (1 adult male, 3 adult female, 3 juvenile female) were captured. All were banded, wing tagged, and released at the capture site.

The recently apparent dispersal of Quabbin-trapped turkeys from Barre, Douglas, and the Quabbin itself is encouraging. However, the rate and extent of dispersal, the survivability of the turkeys, and the degree of inherent wildness is inferior to that observed in restoration work in other states which used solely wild-trapped stock. In order to maximize success and minimize delay in the statewide restoration project, high-quality, wild-trapped stock should be obtained and released on suitable areas in western and central Massachusetts, with future trap and transplant efforts based on stock from these new populations. Through the cooperation of the New York State Department of Environmental Conservation, a few wild-trapped turkeys have already been obtained. The project leader, and a University of Massachusetts graduate student trapped seven turkeys (1 adult male, 2 immature male, 1 immature female, 3 adult female) in Allegany State Park, Cattaraugus County, New York in March 1972, and released them in Beartown State Forest, Berkshire County, Massachusetts. Hopefully, enough more can be obtained to bring the total released to fifteen turkeys.

Mr. Walter M. Tzilkowski, a graduate student at the University of Mass., is conducting an investigation of the habitat utilized by transplanted wild turkeys, with special emphasis being given to areas used for nesting, brood-rearing, and winter feeding. In conjunction with this, one turkey from the Horse Mountain release, two from the Prescott

(Continued on Page 19)

Photo by Dick Smith

Musket shooting on National Hunting and Fishing Day — part of a nationwide effort on the part of sportsmen to educate the public.

Information and Education

The Massachusetts Fish and Game Division has always enjoyed good communication with the public because of its policy of allowing any and all employees to openly discuss any phase of their immediate duties. This allows the Division to have 150 people engaged in public relations. The Division has always benefited from this kind of honest communication.

In addition to their other duties the District Managers are responsible for disseminating information to the public. This regional program has been in effect for 23 years and has been highly successful in bringing government to the people.

During Fiscal 1972 the districts, Westboro field headquarters and the Boston office handled 450 informational meetings throughout the state. Many problems and misunderstandings are averted with this type of communication.

Regarding the wetlands bond issue, the I and E section prepared a movie on the Hockomock Swamp, a slide show for lecture use by the districts, a special brochure, and assisted the Mass. Audubon Society in the publication of a magazine designed to foster interest in wetlands protection.

An effort was made to help sportsmen and environmentalists find unspoiled areas by preparing a list of topographic map outlets.

For the first National Hunting and Fishing Day, the Division assisted sportsmen's clubs where possible and hosted open houses at game farms, hatcheries and at the Westboro Wildlife Management Area. Approximately 45 clubs hosted similar open houses.

"Turkeys Under Glass" was the Division's exhibit at the New England Sportsmen's Show. A live pair of wild turkeys (male and female) in their natural habitat proved an instant success.

In addition to the turkey exhibit 300 items from the Division's Fish and Wildlife Museum were displayed at the Sportmen's Show cooperatively with Commerce and Development.

The Magazine

There is a tendency among I and E'ers to stress information and to ignore education. Almost without exception state fish and game agencies are extremely energetic in providing information about their fish and wildlife programs, but too much of the information is designed to solicit support for these programs and too little is designed to educate.

The public is informed through news releases, lectures, TV programs, radio programs, leaflets, magazines, annual reports. But one can be informed without being educated. Education is the process by which raw information is organized and stashed away for future use. Facts relating to the environment are bricks — nearly worthless by themselves but when laid and cemented with the mortar of education, they are the foundation on which an individual can build his outdoor philosophy. Does it really matter, for instance, if a person can rattle off the names of birds and mammals but is incapable of grasping the inherent good in a simple predator-prey relationship and advocates the shooting of "bad" raptors because they eat "good" game birds? Does it really matter if an individual knows how our trout are raised, where they are stocked and how to go about catching them if he sees trout fishing as simply a method of collecting meat?

Like other I and E people in other state fish and game agencies we occasionally find our program foundering in a lot of loose "information"; every now and then we stop and ask ourselves where we're going. With the magazine we have attempted to set a course and to put the education back into our information and education program.

Massachusetts Wildlife is not a sporting journal. We are not nearly as interested in the simple acts of hunting and fishing as in the philosophy that underlies — or should underlie — hunting and fishing.

In the May-June issue Dann Colburn rats to our readers on 45 of his favorite bass hot spots. Dann and the rest of us know enough about bass not to worry much about these little gold mines getting "cleaned out" so we offered them to other fishermen in the hope that an underharvested resource would get more attention. We hope anglers found the two-page list useful, but, for our money, the list itself wasn't one tenth as important as the single paragraph that preceded it:

". . . Do not treat (this list) as a complete guide to Massachusetts bass fishing, just as a collection of one fisherman's favorite spots. I hope you enjoy them as much as I have. All I ask is that you fish quietly, cleanly, with your mind open to the pond and the beauty that surrounds it, that you go not as a taker but as a participant."

In the July-August issue the editors tackled a sticky problem—woodchuck hunting. For some time we have been defining conservation as the wise use of our natural resources so how were we supposed to justify a type of hunting in which 99 percent of the time the game is left to rot on the ground? "Pest control" rationalization won't work; occasionally woodchucks may become pests; in those cases where they are, though, we should be addressing ourselves to pest-control agents, certainly not hunters who harvest and utilize a resource in the true spirit of conservation. The statement that there are always plenty of woodchucks — while quite correct — is irrelevant to the topic at hand. Our concern is not what woodchuck hunting does to woodchucks but what it does to hunters. No matter how you slice it shooting something — anything — and leaving it where it falls is lousy conservation. Woodchuck hunting is quite popular in Massachusetts and we weren't about to curb it any by coming out against it in our little magazine. A ban on woodchuck hunting wasn't what we were really after anyway; we did not object to shooting woodchucks, we objected only to wasting woodchucks. And, again, it was not

The Massachusetts Junior Conservation Camp is directed by Massachusetts Conservation Incorporated, a non-profit corporation chartered for the purpose of conservation-education in cooperation with the Massachusetts Department of Education, Massachusetts Department of Natural Resources, and Massachusetts Division of Fisheries and Game.

the actual waste itself that bothered us but the overall cheapening effect that such waste has on the grand sport of hunting.

Accordingly we published a straight-forward article on woodchuck hunting and obtained permission from Remington to run three woodchuck recipes beside it. The recipes appeared in obvious places, along with the following editor's note:

"The editors of Massachusetts Wildlife strongly urge hunters not to let the woodchucks or, for that matter, any other game they harvest go to waste. Three recipes for woodchuck, taken from the Remington Wild Game Cookbook, courtesy of Remington Arms, appear on the following pages. Try them; they're delicious."

One of the most widely used arguments against hunting is its alleged damaging effect on wildlife populations. The bare biological fact is that there isn't any — not now with modern management techniques and adjustable game laws. We are losing our wildlife at an alarming rate, but not to hunting; the single decimating factor is habitat destruction. We can present this fact as straight information until we're blue in the face and the reaction among readers will invariably be the same — hunters will applaud, anti-hunters will hiss and spurn our effort as "propaganda." Here is a superb opportunity for a bit of education. If we resist the temptation to force-feed our readers, and let them draw their own conclusions from low-key and honestly-worded illustrations, then we will have succeeded in our objective. The November-December issue carried a curious little piece entitled "Monument to the Past." In it the life and death of the passenger pigeon was recorded. Even after a century of uncontrolled exploitation the passenger pigeon flourished. He survived in the face of set guns, nets, burning pots of sulfur, clubs, canoe paddles. He fed a nation until that nation destroyed his habitat — the virgin hardwood forests — then he vanished swiftly and forever. This straight history was all the article contained and it was all it had to contain. Any editorializing on our part would have weakened our position and given it the scent of propaganda.

Fish and game agencies are arms of state government and because they are, many have the unjustifiable notion that they should evade controversial issues. Conservation by its very nature is controversial and if I and E sections are conscientious about living up to their written obligations they must not duck when the flak gets thick. People in state government have been typecast as pompous politicians unwilling to commit themselves on any given issue. Because many otherwise honest and energetic state employees see this stigma as an expected norm that attends their particular office much of the written material that flows out of state agencies is spineless and veiled in verbosity. State agencies should do the job that the public created them for even if it means offending certain segments of the public. Accordingly we have attempted in our magazine to publish hard-hitting, tersely-worded articles on environmental subjects. And, in those cases where exploiters have been government agencies or powerful corporate interests we have not hesitated to name names. For example, an article on the rape of the Millers River appeared in our May-June issue; in it we listed every known polluter together with those polluters who have defied clean-up orders from the Division of Water Pollution Control. Another article, in the January-February issue, examined the problem of oil pollution and the governmental and corporate negligence and greed that permits it.

Finally, in our editorials we have dealt with such delicate topics as "eco-pornography" (July-August), slob "sportsmen," (May-June), and the divisive bickering among environmentalists over the morality of hunting (January-February).

Twelve half-hour TV shows on Division projects were prepared for Channel 6, 1 for Channel 56, 1 for Channel 4.

Photography

The I and E section was most fortunate in obtaining the full-time services of two highly skilled wildlife photographers. Jack Swedberg, an experienced and eminently qualified wildlife photographer now heads the photo section. Swedberg has worked primarily in Massachusetts and has a wide knowledge of the state's ecology;

Right: robins and water snake, each a vital link in a complex chain of life. Part of the Division's I and E effort has been to educate the public to the fact that there is no such thing as a "bad" creature or, for that matter, a "valuable" one. All life forms have proven their worth by their very existence and how man perceives them hasn't one shred of cosmic relevance. (photos by Bill Byrne).

he has published photos in virtually every major conservation magazine in America. His films have received national recognition. Bill Byrne, transferring from the deer project, has had professional training in wildlife management and wide experience in wildlife photography; he will be working under Swedberg's direction.

New field photo subjects under the Division's new photography set-up have included: turkey, duck (nesting and brood), barred owl, Canada goose, snow goose, woodcock (nest), grouse (nest), wood duck (nesting in natural cavity), songbirds, gulls, cormorants, pheasants, goshawks(in flight), hummingbirds, various waterfowl, beaver, deer, foxes, snakes, frogs, flowers.

A new filing system for stills and movies has been implemented. Books containing numbered contact sheets categorize mammals, birds, reptiles, amphibians, fish, insects, plants, wildlife management projects alphabetically by species.

Colored stills have been filed by subject in closed metal trays. Each tray contains 600 35mm transparencies, filed by species in groups of 30.

Movies have been filed on reels according to subject. Each has been labelled by species on the outside of the can.

Twelve half-hour TV shows on Division projects were prepared for Channel 6, 1 for Channel 56, 1 for Channel 4. Regular news spots were released to all major networks.

A slide show entitled "Ecology" was prepared and set to music; a film entitled "Song of the Waterfowl" was also prepared and set to music. A comprehensive film on the wood duck project was put together for lecture use by Division personnel.

The photo section requested the location of certain subjects via news releases. The experiment proved most rewarding.

Forthcoming were 4 goose nests, 3 wood duck nests in natural cavities, 1 grouse nest, 2 woodcock nests, 1 red fox den, one otter fishing area, 1 black bear with cub.

Respectfully submitted,
Richard Cronin,
Chief of Information and Education

The Permanent Protection Wetlands Act will help the Division of Fisheries and Game preserve the state's most productive wildlife habitat. (Photo by Floyd Richardson)

REALTY

During the past year the Division has been the recipient of four gifts of land, each of which was a valuable addition to the Division's ever increasing acreage.

The Western Massachusetts Electric Company donated to the Division a gift of 150 acres of prime farmland situated in the Town of Northfield. The area is already being managed for wildlife by the district personnel. We are sure that any state or local agency interested in the preservation of open space would have been most grateful for this generous gift.

The Squannacook Sportsman's Club was most generous when it decided to give us a parcel of land on the beautiful Baddacook Pond in Groton, which they had acquired. We feel quite sure that sportsmen during this and many more fishing seasons to come will find this parking area both convenient and useful. We hope they will realize that the area was given for everyone's use by fellow sportsmen.

The Hamilton Rod and Gun Club was also the generous donor of some 62 acres of land in the Towns of Brookfield and Sturbridge, which they originally acquired for their own use. This area is close to a Division-controlled wildlife management area and is a very valuable addition to our holdings throughout the state.

In December the Division was pleasantly surprised with the offer of a 25-acre parcel in the Town of Uxbridge. The site is unique in that it has a two-mile long canal and many ecological features which make it most attractive. The site was evaluated by Division personnel. They determined that it had excellent fish and wildlife potential. Consequently, Mrs. Rose N. Marcus of Worcester, owner of the property, presented the deed, transferring ownership to the Division. We are grateful for Mrs. Marcus's generosity.

A long discussed acquisition was completed with the acquisition of approximately three acres on Cook Pond in Fall River. Plans to clean up this pond, build a pier and parking lot with a good access road are now in the preliminary stages of development. More land was added to the Swift River Area, the Crane Pond and Downfall Areas. A large tract of salt marsh was acquired in Ipswich and a very valuable parcel was acquired along the Mashpee River in Mashpee.

The acquisition of several other parcels was planned in this fiscal year. However, great difficulties were experienced in obtaining the necessary approvals to employ title examiners and appraisers. Consequently, the completion of these acquisitions was delayed and in some cases we will probably lose the land as a result of these delays.

Much time was spent by the staff in classifying land and bringing the Master Land Inventory up-to-date. We are required to submit each September a revised and updated inventory. It may be of interest to know that as of July 1, 1972 the Division owned 24,939.8 acres throughout the state.

Each year the staff receives many inquiries from residents of the state about our interest in acquiring their land. We make a sincere effort to check into these offers to determine the suitability of the property to our needs and other related information necessary before a decision can be made on what action will be taken in each case. This entails an investment of time and travel, but we feel that if a landowner is interested enough to contact us, then we should show interest by checking into the matter. Many times the land offered is not suitable for our needs, but we advise the owner of other agencies that might be interested in the property.

The enactment of the Coastal Marshes and Inland Wetlands Act (Chapter 839 Acts of 1971) which is adequately covered in other sections of this annual report, heralded the beginning of an important new program for the Realty Section.

In the administration of funds provided in the previous bond issue for land acquisitions we felt a moral obligation to expend these funds as economically and prudently as possible. We see no reason to change our policy in the administration of coastal marshes and inland wetlands. Since we do not have permanent staff members to handle title examinations and appraisals, we are entirely dependent on the hiring of consultants to do this work. This method of operation could be administratively sound and economical if those outside the Division who must approve the employment of these consultants could develop a system whereby action could be taken in a matter of a couple of weeks rather than have the approvals drag on for months as has been the case in many instances. This is a bottleneck which has slowed our acquisition program down considerably and has caused some sellers to become concerned that we are not going to purchase their land.

Work has started on the Hockomock Swamp area, which will be a major program of acquisition. We are most appreciative and grateful to the Board of Selectment of the Town of Easton for providing us with the office space necessary to establish a project headquarters in the area of acquisition. This is a major acquisition undertaking and will involve between five and six thousand acres when completed. There are literally hundreds of small parcels of land within the swamp area and progress will be slow and tedious.

Respectfully submitted,
Joseph H. Johnson
Chief of Wildlife Lands

WILDLIFE **(continued from page 14)**

Peninsula flock, and one from the Beartown release were equipped with back-pack radiotelemetry units for monitoring the birds' movements.

Respectfully submitted,
Warren W. Blandin,
Chief of Wildlife Research
and E. Michael Pollack,
Chief Game Biologist

Financial Report July 1, 1971 to June 30, 1972

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Licenses		Price	Number	Gross Amount	Fees Retained by Town Clerk or City	Net Returned To State
Series No. 1	Res. Cit. Fishing	(5.25)	127,530	669,532.50	31,646.75	637,885.75
Series No. 2	Res. Cit. Hunting	(5.25)	57,914	304,048.50	14,369.50	289,679.00
Series No. 3	Res. Cit. Sporting	(8.25)	60,455	498,753.75	14,986.75	483,767.00
Series No. 4	Res. Cit. Minor Fishing	(3.25)	19,358	62,916.75	4,823.75	58,093.00
Series No. 4-A	Res. Cit. Female Fishing	(4.25)	26,015	110,563.75	6,459.50	104,104.25
Series No. 5	Res. Cit. Minor Trapping	(3.25)	215	698.75	53.50	645.25
Series No. 6	Res. Cit. Trapping	(8.75)	599	5,241.25	147.25	5,094.00
Series No. 7	Non. Res. 7-day Fishing	(5.25)	2,393	12,563.25	594.75	11,968.50
Series No. 9	Non. Res. Fishing	(9.75)	3,999	38,990.25	986.50	38,003.75
Series No. 9-A	Alien Fishing	(9.75)	1,022	9,964.50	252.25	9,712.25
Series No. 10	Non. Res. or Alien Hunting	(16.25)	2,575	41,843.75	494.00	41,349.75
Series No. 12	Duplicate Licenses	(.50)	3,469	1,734.50		1,734.50
Series No. 15	Res. Cit. Sporting	(FREE)	17,542			
Series No. 17	Res. Cit. (Mentally Ret.) Paraplegic and to the blind	(FREE)	856			
Series No. 18	Military or Naval	(FREE)	7,128			
Series No. 19	Paraplegic Hunting	(FREE)	36			
			331,106	1,756,851.50	74,814.50	1,682,037.00

APPROPRIATIONS AND EXPENDITURES

Account No & Title	Appropriation	Expenditures & Liabilities	Reverted
1070 0000 Administration	252,961 00	$ 228,774.97	$24,186.03
1070 2300 Fisheries Management	687,386.00	663,577.13	23,808.87
••1070 2322 Anadromous Fish Projects	22,000.00	20,624.97	1,375.03
•••1070 2342 Fish Restoration Projects	54,960.00	53,825.03	1,134.97
1070 2400 Wildlife Management	577,927 00	564,654.21	13,272.79
•••1070 2461 Wildlife Restoration	221,525.00	220,020.39	1,504.61
••••1070 2502 Eastern Dove Management	3,500 00	3,500 00	
	$1,820,259 00	$1,754,976.70	$65,282.30

	Continuing Appropriations	Expenditures	Balance Forward
1070 2451 Damage by Wild Deer and Moose	$13,420.30	$ 8,731 56	$4,688.74
1070 2302 Replacement Hatchery House Sunderland	50,000.00		50,000.00
1070 2303 Pollution Abatement McLaughlin	15,000.00		15,000.00
1070 2305 Replacement Upper Pools Sandwich	35,000.00		35,,000.00
1070 2463 Construction Storage Building Newbury	12,200.00		12,200.00
1070 9013 Land and Water Acquisition and Development	506,619.32	92,647.26	413,972.06
1070 9016 Coastal and Inland Wetlands	5,000,000.00		5,000,000.00
	$5,632,239.62	$101,378.82	$5,530,860.80

•• 60% Reimbursed Federal Funds
••• 75% Reimbursed Federal Funds
•••• 100% Reimbursed Federal Funds

HOW THE SPORTMEN'S DOLLAR WAS SPENT

ADMINISTRATION				
Administration	1070-0000	$126,506 33		
Board of Fisheries & Game	1070-0000	512.00	127,018.33	5%
Information Education	1070 0000		101,756.64	4%
FISHERIES PROGRAMS				
Fish Hatcheries	1070 2300		453,525.09	18%
Fisheries Management	1070 2300	$210,052.04		
••• Fish Restoration Projects	1070-2342	53,825.03		
Fisheries Management	1070 2400	142,294.47		
Fisheries Research Coop. Unit	1070-2341	10,000.00		17%
•• Certain Anadromous Fish Projects	1070-2322	20,624.97	436,796.51	
WILDLIFE PROGRAMS				
Game Farms	1070 2400		280,065.27	11%
Wildlife Management	1070 2400	142,294.47		
Wildlife Research Coop. Unit	1070-2441	8,360.72		
• Damage by Wild Deer	1070 2451	8,731.56		
••• Wildlife Restoration Projects	1070-2461	220,020.39		
•••• Eastern Dove Management	1070-2502	3,500.00	382,907.14	15%
LAND ACQUISITION				
• Land & Water Acquisition and Development	1070-9013		92,647.26	4%
DEPT. OF NATURAL RESOURCES				
Natural Resources Officers Salaries and Expenses (26%)	1020 0000	236,132.00		
Supervision Public Hunting and Fishing Grounds (100%)	1020 0200	14,270.00		
Office of the Commissioner (.004)	1000-0000	2,223.70		
Office of the Sec. of Environmental Affairs (2%)	0450-1400	2,110.00	254,735.70	10%
RETIREMENT ASSESSMENT	0612 1000		60,000.00	2%
GROUP INSURANCE			59,041.00	2%
INTEREST ON BONDED DEBT	1079 8000		90,375.00	4%
SERIAL BONDS AND NOTES	1079-9000		200,000.00	8%
	TOTAL		$2,538,867.94	100%

• Continuing Appropriations
•• 60% reimbursable Federal Funds
••• 75% reimbursable Federal Funds
•••• 100% reimbursable Federal Funds

Massachusetts Freshwater Fish Awards Program

During Fiscal 1972 the Massachusetts Freshwater Sportfishing Awards Program continued through financial assistance from Division of Tourism and the Department of Commerce and Development.

The second year with salmon on the list saw a new state record — an increase of 1 lb. 4 oz. The new record, 9 lbs. 5 oz. is held by John E. Courtney of Auburn.

The catfish record fell to Wayne Briggs, Belchertown who took a 13 lb. 14 oz. fish from Metacomet Pd., Belchertown.

The award plaque ceremony was held at the New England Sportsmen's Show, Hynes Auditorium.

Freshwater Fish Records

FRESHWATER FISHING RECORDS FROM JULY 1, 1972 to JUNE 30, 1972

Species	Weight	Length	Girth	Place Caught	How Caught	Date	Caught by
LM Bass	9 lb. 12 oz.	25''	19.25''	Muddy Pd., Carver	live bait	9 27 71	Kenneth King, Guild Rd., Brockton
SM Bass	6 lb. 8 oz.	20''	16''	Wachusett Res., Boylston	fly fishing	8 19 71	Arnold Korenblum, 3 Whitelock Dr., Marlboro
N. Pike	17 lb 14¼ oz.	40¼''	18¾''	Cheshire Res., Cheshire	ice tackle	1 13 72	Lewis Spiewak, Jr., 29 Copley Terrace, Pittsfield
Pickerel	5 lb. 12 oz.	26''	14½''	Halfway Pd., Plymouth	ice tackle	2 9 72	William Bunker, 411 Laurel St., Bridgewater
R. Trout	5 lb. 15 oz	24½''	13½''	Sluice Pd., Lynn	spinning	4 15 72	George Booth, 20 West St., Marblehead
B. Trout	11 lb. 9 oz.	25.5''	20''	Wachusett Res., Boylston	live bait	5 10 72	Otis Bates, 173 Highland St., Clinton
L. Trout	12 lb 5 oz.	31½''	17¾''	Wachusett Res., Boylston	live bait	4 24 72	Robert Whittier, 135 Winter St., Clinton
Shad	8 lb. 4 oz.	25½''	15¼''	Chicopee R., Chicopee	spinning	5 18 72	Walter Ruszala, 150 Orchard St., Chicopee
Salmon	9 lb. 5 oz.	27.1''		Quabbin Res.	trolling	9 5 71	John Courtney, 45 Winbrook Dr., Auburn
Catfish	13 lb. 14 oz.	29.6''		Metacomet Pd., Belchertown		9 15 71	Wayne Briggs, P.O. Box 925, Belchertown
Walleye	7 lb 8 oz.	30½''	15''	Quabbin Res.	live bait	4 22 72	David Bassett, 803 East St., Amherst
Bluegill	1 lb. 3¼ oz	11[illegible]''	9¾''	Red Bridge, Three Rivers	bait casting	6 12 72	Michael Morse, 68 Sparrow Dr., Springfield
Bullhead	4 lb 02 oz	19½''	12''	Dickinson Lk., Lunenburg	live bait	5 2 72	Richard Dicker, 115 Buttrick Ave., Fitchburg
W. Perch	2 lb. 8 oz.	15¾''	11''	Lake Wickaboag, W. Brookfield	ice tackle	2 13 72	Regina M. Ramonas, Lakeview Ave., W. Brookfield
Y. Perch	1 lb 5 oz	15⅝''	9''	Brigham Pd., Hubbardston	ice tackle	12 4 71	George Furmanick, 946 Main St., Clinton
Brook Trout	3 lb	19''	12''	Sawmill Pd., Sharon	spinning	4 18 72	John Schuko, 63 Pollio Ave., Stoughton
Calico	1 lb 12 oz	15¼''		Triangle Pd., Plymouth	live bait	4 29 72	Arthur Stetkis, 85 Howard St., Brockton
R. Trout	5 lb. 15 oz.	24½''	13½''	Sluice Pd., Lynn	R. Trout	4 15 72	George Booth, 20 West St., Marblehead

(Continued on page 21)

SUMMARY OF FISH AND GAME INCOME

*Fishing, Hunting and Trapping Licenses	$1,682,037.00
**Special Licenses, Trap Registrations and Tags	7,569.65
Archery Stamps	5,757.40
Rents	4,378.00
Miscellaneous and Sales	12,047.17
Court Fines	10,335.00
Refunds Prior Year	98.97
Pittman-Robertson Federal Aid	131,449.37
Dingell-Johnson Federal Aid	111,504.69
Anadromous Fish Projects Federal Aid	28,469.89
Mass. Mourning Dove and Woodcock Reimbursement	6,981.83
Reimbursement for Services	22,118.61
Bureau of Outdoor Recreation Reimbursements	125,000.00
	$2,147,747.58

*See Receipts from Fishing, Hunting and Trapping Licenses
** See Analysis of Special Licenses

TRANSFERS TO INLAND FISHERIES AND GAME FUND

Interest on Investments	4,537.50
Gasoline Tax Apportionment	281,810.15
Surplus in Inland Fisheries & Game Fund as of June 30, 1972	$155,810.86

ANALYSIS OF SPECIAL LICENSES

TYPE OF LICENSE	Number ISSUED	RECEIPTS
TRAP REGISTRATION:		
Initial	113	$113.00
Renewal	314	314.00
Duplicate	1	.50
FUR BUYERS:		
Resident	19	190.00
Non-Resident	5	100.00
TAXIDERMIST:	85	425.00
PROPAGATORS:		
Class 1 (Special Fish:)		
Initial	19	95.00
Renewal	181	543.00
Class 3 (Fish)		
Initial	12	60.00
Renewal	79	237.00
Class 4 (Birds & Mammals)		
Initial	125	625.00
Renewal	483	1,449.00
Class 6 (Dealers)		
Initial	7	35.00
Renewal	76	228.00
Additional	440	440.00
Class 7 (Indiv. Bird or Mammal)		
Initial	44	44.00
Renewal	80	40.00
SHINERS: (for bait)	152	760.00
FIELD TRIAL LICENSES:	8	80.00
QUAIL FOR TRAINING DOGS:		
Initial	18	90.00
Renewal	72	216.00
COMMERCIAL SHOOTING PRESERVES	13	650.00
TRAPPING OF CERTAIN BIRDS:	2	10.00
MOUNTING PERMITS:	11	11.00
TAGS:		
Game	4403	
Commercial Shoot. Pres.		
Pheasant	1120	
Quail	300	
Posters	400	311.15
Fish	13,300	133.00
SPECIAL FIELD TRIAL PERMITS:	37	370.00
	TOTAL:	$7,569.65

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS
Through June 30, 1972

Species	Weight	Length	Girth	Place Caught	How Caught	Date	Caught By
LM Bass	12 lb. 1 oz.	25¾''	21¾''	Palmer R., Rehoboth	bait casting	5 9 63	George Pastick, Fall River
SM Bass	6 lb. 12 oz.	21''		Pleasant Lk., Harwich	spinning	5 14 67	Thomas Paradise, Arlington
N. Pike	24 lb. 8 oz.	45½''	22''	Onota Lk., Pittsfield	live bait	1 13 67	Kris Ginthwain, Pittsfield
Pickerel	9 lb. 5 oz.	29½''		Pontoosuc Lk., Lanesboro		54	Mrs. James Martin, Stockbridge
R. Trout	8 lb. 4 oz.	26''	16''	Deep Pd., Falmouth	live bait	10 15 66	Roger Walker, Eastondale
Brown Trout	19 lb. 10 oz.	31½''	22⅝''	Wachusett Res., Boylston	spinning	5 19 66	Dana DeBlois, Sterling
L. Trout	13 lb. 6 oz.	33''		Quabbin Res., Pelham	trolling	4 17 71	Alan Storm, Gardner
Shad	8 lb. 8 oz.	28''	17''	North R., Hanover	spinning	5 6 71	Richard C. Brown, Norwell
Channel Catfish	13 lb. 14 oz.	29.6''		Metacomet Pd., Belchertown		9 15 71	Wayne Briggs, Belchertown
Walleye	9 lb. 3 oz.			Assawompsett Pd., Lakeville	bait casting		Allan Spaulding, Whitman
Bluegill	1 lb. oz	11¼''	9½''	Bog Pd., Norton	spinning	10 17 65	Robert Barrett, Stoughton
Bullhead	5 lb. 9 oz.	22½''	11½''	Conn., R., Hadley	live bait	6 8 63	Mrs. Erna Storie, Chicopee Falls
	5 lb. 8 oz.	22½''	14''	Leverett Pd., Leverett	live bait	8 2 65	Stephen Brozo, Amherst
	4 lb. 9 oz.	22½''	11½''	Conn. R., Chicopee	live bait	9 8 65	Joseph Kida, Chicopee
Calico	2 lb. 9½ oz.	18''	14''	Merrimack, Lowell	spinning	6 8 65	George Olsson, Lowell
	2 lb. 9 oz.	18''	13½''	Savorys Pd., Manomet	ice tackle	1 24 71	Charles Godin, Manomet
W. Perch	2 lb. 12 oz.	17''	13''	Herring Pd., Plymouth	trolling	5 21 71	Manual P. Souza, Dartmouth
Y. Perch	2 lb. 5 oz.	17¾''	12''	Wachusett Res., Boylston	spinning	4 23 70	Arnold Korenblum, Marlboro
Brook Trout	6 lb. 4 oz.	24''	14''	Otis Res., Otis	spinning	6 24 [illegible]	Thomas Laptew, Granville
Salmon	9 lb. 5 oz.	27.1''		Quabbin Res.		9 5 71	John E. Courtney, Auburn

Division of
FISHERIES and GAME
Field Headquarters
WESTBORO, MASS 01581

Second Cla
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at Worcester,

MASSACHUSETTS DIVISION OF FISHERIES AND GAME

Ten Years of Progress

ANNUAL REPORT 1973

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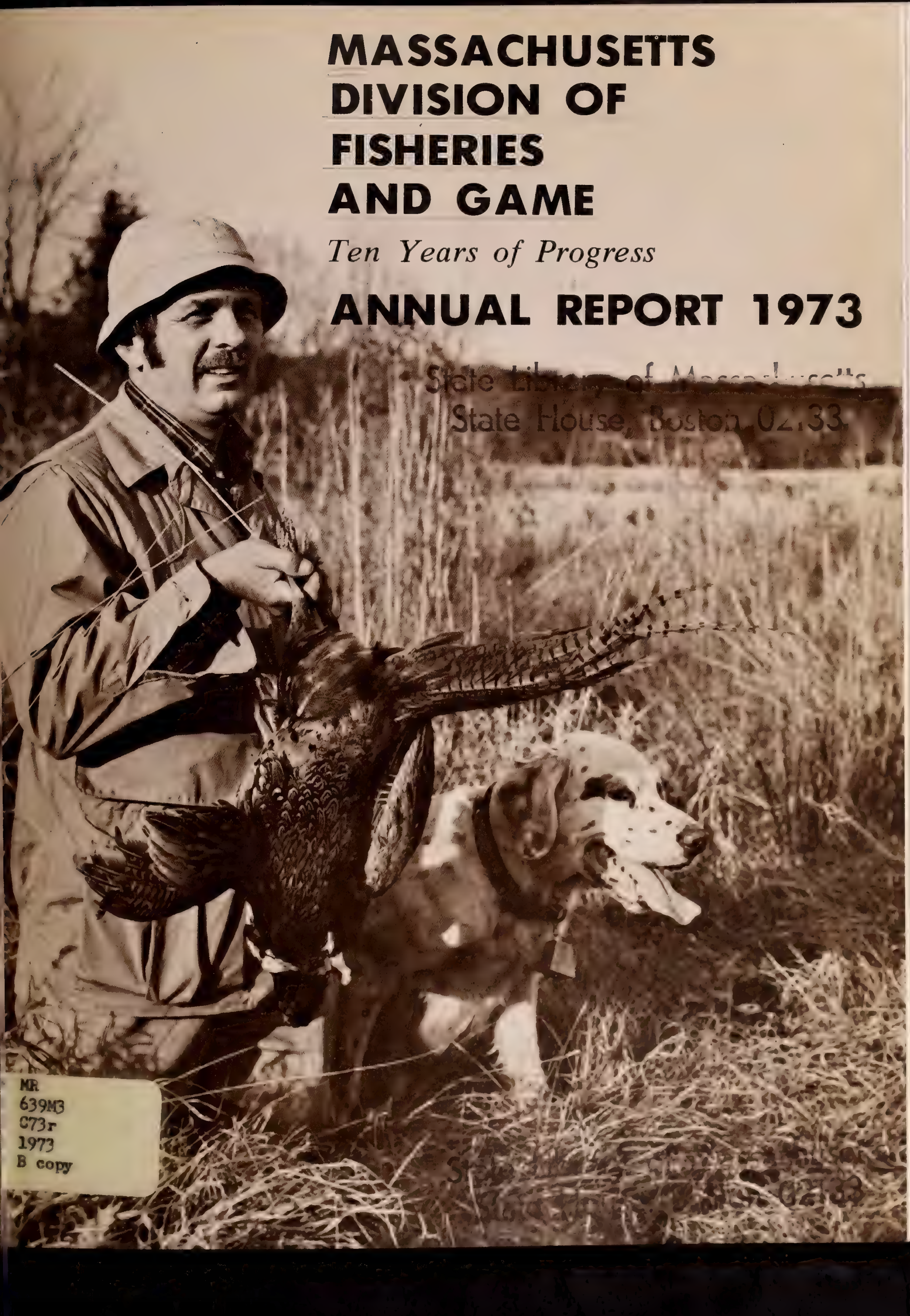

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Governor
FRANCIS W. SARGENT

Director
JAMES M. SHEPARD

DIVISION OF FISHERIES AND GAME

Board
ROGER D. WILLIAMS, **Chairman**
Sudbury

BRADLEE E. GAGE, **Secretary**
Amherst

HARRY C. DARLING,
East Bridgewater

KENNETH F. BURNS
Shrewsbury

MARTIN H. BURNS
Newbury

JAMES M. SHEPARD
Director

PAUL S. MUGFORD
Acting Asst. Director

COLTON H. BRIDGES
Superintendent

E. MICHAEL POLLACK
Chief Game Biologist

DAVID FREDENBURGH
Chief Fish Culturist

WARREN W. BLANDIN
Chief of Wildlife Research

RICHARD CRONIN
Chief, Information and Education

JOSEPH JOHNSON
Chief of Realty

District Managers

Western District
EUGENE D. MORAN
Hubbard Ave., Pittsfield
Phone: 447-9789

Central District
CARL S. PRESCOTT
Temple St., W. Boylston
Phone 835-3607

Northeastern District
WALTER HOYT
Box 86, Acton
Phone: 263-4347

Southeastern District
LEWIS C. SCHLOTTERBECK
RFD No. 3, Buzzard's Bay

COMMONWEALTH OF MASSACHUSETTS

Division of Fisheries and Game
108th Annual Report

His Excellency, Francis W. Sargent, Governor of the Commonwealth, the Executive Council, the General Court and the Board of Fisheries and Game:

Gentlemen:

I have the honor to submit herewith the one hundred and eighth annual report of the Division of Fisheries and Game, covering the fiscal year from July 1, 1972 to June 30, 1973.

James M. Shepard, Director

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Ten Years of Progress: More than any ten-year period in the Fish and Game Division's history, the decade since 1963 has seen drastic change both in our overall program and philosophy. During this period fish and wildlife management has evolved to established science. Much hypothesis has crystalized into time-tested theory. As rapid and dramatic as the change has been, we are only just beginning to accelerate, just scratching the surface of a vast potential for fish and wildlife restoration. Most encouraging of all — more so even than the technical advances — has been the sudden development among the general public of an environmental conscience; the "Land Ethic" that Aldo Leopold could only dream about has at last begun to surface in our society as a reality. This new philosophy is readily apparent inside the Fish and Game Division and in those who are served by the Division. At last we are coming to realize that hunting and fishing — like all outdoor recreation — is synonymous with a healthy environment. More and more, as is evidenced by our land acquisition program, the Division is concerning itself with not just fish and wildlife but the foundation on which these resources rest. Today that foundation is crumbling everywhere, but if conservationists can keep the pace they have set for themselves over the last decade, there is much hope for the future.

Cover pnoto by Jack Swedberg

THE COVER: A plump ringneck was not the important thing collected this morning; a memory was.

Ten Years of Progress

One of the many large abandoned farms purchased by the Division with sportsmen's funds. While providing top-notch hunting, the land is also used for other forms of recreation. In five years after the $1 license increase the Division bought 10,000 acres at an average cost of $150 per acre.

In describing progress in annual reports there is a tendency to gloss over the many trials and tribulations that inevitably take place in any progressive program. Certainly the Division went through some trying times in the years 1963 to 1973. There was inflation, ever-present budget restrictions, unrest among sportsmen over deer management and conflict over the Division's efforts to establish a modern stream-stocking policy.

Nevertheless, the Division has emerged from this ten-year period in generally fine shape and with a dramatic record of accomplishment.

Two board members have served the Division for nearly the full period. To these two men — Harry Darling (12-3-62 to 10-6-72) and Martin Burns (11-27-63 to 10-6-73) we dedicate the 1973 Annual Report.

Harry Darling was at the helm of the Board for six years during the ten years. He took over for Roger Williams who left the state for business reasons. Darling graciously made the motion to re-elect Roger Williams Board Chairman when Williams returned to Massachusetts in October of 1970. Williams' first term as Chairman had been from 1961 to 1965, his second from 1970 until the present.

Darling's devotion to the principles of a non-partisan Fish and Game Board goes back to 1948 when he helped lay the groundwork for legislation that established the Board system.

The Board

The Fish and Game Board was established in 1948, and has since proven to be a stable and workable system of government. During the last ten years 11 men have served on the Fish and Game Board. The five present members have averaged five years each for a total of 25 years. The present Director, James M. Shepard, has served for the last nine years and has had a chance to cement a professional working relationship with the Board. This situation has permitted the evolution of well-coordinated leadership with the added strengths of continuity and experience.

In 1963 Fish and Game income was about $1.3 million — surplus about $.25 million. In 1973 annual income had doubled — surplus close to $.5 million.

Yet the demand for services has outstripped the increase in revenue. The Division made a plea for funding help based on a study which indicated that sportsmen contribute more than $110 million to the economy of the state. There is an additional $1 million contributed in state excise taxes and $1.5 million for licenses. While the passage of a $5 million bond issue aimed at wetland purchase and protection indicates that increasingly the Legislature is responding to these figures and is aware that the Fish and Game Division is the most efficient land-purchasing agent, much more is needed.

The Fish and Game Division has made a tremendous contribution to hunter safety throughout the nation by developing the color "hunter orange". Hunter orange shows up in the woods like a warning beacon yet does not frighten most animals.

The Boston office's move to the new State Office Building was certainly a highlight of the 60's.

The establishment in 1971 of the Fish and Wildlife Museum by Director Shepard and Mike Beatrice will provide a sense of history for future conservationists.

The Division has endeavored to educate youngsters as to proper hunting techniques and gun safety. An important beginning has been the Youth Upland Hunt.

Land Acquisition

Unquestionably the greatest accomplishment in the last 10 years has been in the field of land

In 1963 the Middlesex County League of Sportsmen's Clubs purchased a large tract of land on the Squannacook River and gave it to the Fish and Game Division as an example to other organizations. The dedication took place in 1966, the same year that the $1 license increase for land went into effect. Left is Dick Cronin, then Northeast District Manager. Right, Jack Dixon, Northeast Fisheries Manager.

acquisition. A dozen important parcels were given to the Division by sportsmens clubs, county leagues and public spirited citizens.

Prior to 1963 Fish and Game controlled 19 wildlife management areas which totaled 24,500 acres. Of these the Division owned seven. The other 12 were leased or used with some form of agreement in cooperation with other state and federal agencies.

In 1964 the Board authorized a realty section. A $1 increase in license fees went into effect in 1966. The increase in revenue was used for land acquisition. The same year the Division added an engineer to its staff.

The Information and Education Section along with key staff members took on the biggest selling job in Division history when it publicized the need for the proposed $5 million bond issue for wetland acquisition. Two years of hard work resulted in success.

Since 1963 the Division has purchased for public use approximately 13,000 acres for about $2.5 million. The agency now owns and/or controls 43,000 acres, with many acres being added all the time.

Wildlife

It has also been a productive 10 years for wildlife management. Labor saving devices in other game farms permitted one game farm to be closed and sold. Today there are twice as many male pheasants raised with less expense than there were in 1963. This has resulted in part from a breakthrough in sex linkage developed by the Massachusetts Division of Fisheries and Game. The technique allows culturists to differentiate between male and female pheasants immediately after hatching instead of the former six- to seven-week period.

The Division managed 19 wildlife management areas in 1963. Today it manages 35. These areas are used by the public for all types of recreation — not just hunting and fishing.

Wild turkey populations have been reestablished in suitable range throughout the state. The flocks are small, but at last showing signs of growing. Problems with domestic genes have hampered us in the past but, our biologists are aware of the problem and the situation at last appears to be under control.

Introduction of game birds in vacuum habitat has taken place — sharp-tailed grouse for Nantucket, ruffed grouse for Martha's Vineyard, Canada geese for western Massachusetts.

Fisheries

Great progress has been realized in fisheries management during the last 10 years. Improved access to great ponds and large rivers resulted from legislation enacted in the early 60's.

Lake trout were firmly established in Quabbin Reservoir. Smelt problems were solved. The potential of Quabbin to produce landlocked salmon was proven.

The Division shut down three hatcheries that had produced 60,000 pounds of trout. The same number of men were able to rear 200,000 pounds of trout at the Division's new McLaughlin hatchery in Belchertown.

One of the deactivated trout hatcheries was refitted for modern salmon production.

The Connecticut and Merrimack Rivers show great promise for anadromous fisheries. Joint efforts of Federal and state agencies during the 10 years since 1963 have created much optimism for restoring shad and Atlantic salmon to historic significance.

Since 1963 trout production in poundage has increased by about a third.

To increase interest in fishing and produce some potentially valuable data the Division, with the financial backing of the Division of Commerce and Development, implemented the Freshwater Fishing Awards Program in 1963. Since that year all existing records have been broken save for one 12 pound 1 ounce largemouth bass.

All in all it has been a fabulous ten years. The forecast for the next ten is even better.

The Board Reports

The Fish and Game Board is proud to present to the citizens of the Commonwealth the 108th Annual Report of the Massachusetts Division of Fisheries and Game.

This year began with a number of innovative programs dealing with fish and wildlife conservation. The Board quickly began a hectic schedule of regulatory hearings, followed by an all-around busy year for Director Shepard and his staff.

The black duck imprinting program is an ingenious method of coping with the crippling loss of habitat that Massachusetts is experiencing every day. As one branch of the agency tries to establish more breeding by native waterfowl under artificial conditions, another branch is working hard to purchase and protect remaining wetlands for natural breeding. This well-coordinated effort is typical of the agency's attempts to provide well-balanced and efficient programs.

Massachusetts celebrated National Hunting and Fishing Day on September 23, 1972. The Board feels that this is a significant day in the lives of our citizens in that it honors the contribution of fishermen and hunters to fish and wildlife conservation. Both the President and Governor Sargent signed proclamations in recognition of the contribution of 55 million American sportsmen to the conservation of the nation's renewable natural resources.

The Board held a hearing early in the year to establish a milestone toward specialized, quality hunting. The Board granted a three-day "primitive weapons deer season" to begin the Monday following the regular shotgun season in December of 1973. Our regulation could not provide for the use of rifles or the establishment of a special fee as both would depend on a vote by the Legislature.

The Board was pleased to learn of the appointment of Dr. Donald R. Progulske to head the Department of Forestry and Wildlife Management at the University of Massachusetts and to acknowledge the fine job of Professor Arnold D. Rhodes — Department head for 16 years. Professor Rhodes has returned to full-time teaching at the University's Forestry School.

Board members pictured above are: Top row, left to right — Roger D. Williams, Chairman; Bradlee E. Gage, Secretary. Bottom row, left to right — Martin H. Burns, Kenneth F. Burns, Harry C. Darling.

The Massachusetts Conservation Camp (having completed its 23rd session) continues to be a vital part of the Division's education effort. Youngsters receive expert training in the skills of hunting, fishing and nature study. The Division is proud of the many camp graduates who currently have leadership roles in environmental fields.

In August of 1972 Peter Pekkala, Game Manager, was assigned to the Connecticut Valley District to open an office at the Swift River Wildlife Management Area. This will bring Division programs closer to the people, establishing communications and a better knowledge of wildlife problems in towns that, in the past, were on the fringes of the Western and Central Districts. Westerly towns in the Connecticut Valley District are Colrain, Shelburne, Conway, Williamsburg, Westhampton, Southampton, Westfield and Southwick. On the eastern boundary the towns are Warwick, Orange, New Salem, Ware, Palmer and Monson. In the near future, a permanent District Manager and full District crew will work out of the Belchertown facility.

Where possible the Division assisted the Massachusetts Citizens to Save Open Space in pushing their Farm Referenda. These were written into the November ballot to enable the Legislature to amend the Constitution and assess farmland for its current rather than its potential use. The referenda received an overwhelming "yes" vote so that the Legislature can proceed in this important step to slow the destructive and unplanned development of our remaining open space.

At the waterfowl hearing held on August 18, the Board elected to continue for a second year the three-year experimental zoned waterfowl season. The season is designed to spread hunting opportunities over a greater area.

A much needed increase in license fees went into effect on October 11. This was earlier than expected. Administrative personnel thought the new fees would go into effect January 1, 1973. However, an oversight in stipulating effective date made the bill law 90 days after it was signed by the Governor even though no licenses were available. The Division made an effort through every available medium to contact 56,000 sportsmen before the 90-day deadline of October 11, 1972. The effort was somewhat successful as 31,000 bought licenses during that period; 25,000, however, paid the 66 percent increase. Hunting and fishing licenses went from $5.25 to $8.25. Archery stamps went from $1.10 to $5.10.

For the first time in Massachusetts waterfowl hunting history, the sea duck opening was delayed because of the red tide. An estimated 300 birds of various species were found dead — none after October 3. The sea duck season opened with the regular duck season on October 20.

The Board was pleased to honor two brothers — Ralph and Harold Bitzer — whose combined service to the Division totaled 105 years (the Division itself is 107 years old). On October 14, the Montague Fish Hatchery had its name changed to the Bitzer State Fish Hatchery. Harold retired with 50 years' service and Ralph with 55 years' service.

The first paraplegic deer hunt was a success in terms of enthusiasm and participation of nine paraplegics and the cooperation of Fish and Game personnel. No deer were taken but all concerned felt that the effort was worthwhile.

The archery season harvest of 77 deer was a significant milestone. It nearly doubled the previous year's take and indicated that the antlerless permit system can be made to work effectively.

Another headache that the administration had to cope with was the printer's failure to deliver the 1973 licenses for potential Christmas sales. Final delivery took place the second week in January.

Director Shepard and Law Enforcement Director Ken Crossman worked out a plan whereby individuals who planned to hunt, fish and trap could participate but would, at a later date, have to furnish proof of purchasing a 1973 license.

In an effort to increase the recreational opportunities of Massachusetts fishermen, the Board voted on March 30 to begin the fishing season the Saturday preceding Patriot's Day and end the regular season the Sunday following the third Saturday in October. A special extension, not to include reclaimed trout ponds, runs from the end of the regular season to the last day in February with a two-fish-per-day limit.

In closing, we would like to thank the men and women of the Fish and Game Division for another year of outstanding performance. We are continually impressed with the overall spirit and dedication that we see in the Fish and Game Division. We would also like to thank environmentalists — whether they be consumptive or non-consumptive users of fish and wildlife — for their support without which we would cease to be a significant force for the preservation and restoration of the environment and the fish and wildlife resources that it supports. Lastly, we would like to thank other state agencies and members of the Legislature and executive branch for their continued assistance and cooperation.

Respectfully submitted,
Roger D. Williams
Bradlee E. Gage
Harry C. Darling
Kenneth F. Burns
Martin H. Burns

photo by Jack Swedberg

photo by Jack Swedberg

Above: William Harper of West Acton took this record laker — 16 lbs. 8 oz. — but soon lost it to Paul Drenzek of Ware who took a 17 lb. 13 oz. laker. Right: Division fisheries personnel check Quabbin salmon.

FISHERIES

Anadromous Fish Restoration

THE majority of the Division's anadromous fish programs continued to center around the restoration and enhancement of Atlantic salmon and American shad in the Connecticut River. Unfortunately, the failure of the Federal Power Commission to act swiftly in issuing a direct order to the Holyoke Water Power Company relative to the enlargement of the existing fish passage facilities, set the completion schedule for planned modifications back at least one year. On the brighter side, the functional designs for the proposed fishway at Turners Falls were completed, reviewed and accepted by all concerned, and presently final designs are on the drawing board.

As in 1972, the abnormally wet and cold spring plus cancellation of the annual shad derby sponsored by the Holyoke Water Power Company, produced a negative effect upon the sport fishery at Holyoke, where an estimated 4,403 anglers creeled 3,387 shad during 11,277 hours of angling.

The fishlift at Holyoke passed 22,649 adult shad which was only one-third of what it passed during its best year, 1970. The high water and cool temperatures plus the fact that the number of shad entering the river was down considerably from previous years all contribute to the low passage figure.

The spawning and production of juvenile shad, the result of releasing 1,575 adult shad above the Turners Falls dam, was documented, and migration patterns of adult shad in the vicinity of the Northfield Mountain Pump Storage Plant were determined for various stages of plant operations.

Approximately 4,000,000 fertile shad eggs were shipped from the Connecticut River to the Nemasket, Charles and Merrimack Rivers.

The completion of two salmon smolt imprint stockout pools, a gift of RASA (Restoration of Atlantic Salmon in America) at Tarkill Brook, Agawam, on the Mawaga Sporting Club property and the release of 11,000 smolts at the brook highlighted this year's salmon restoration efforts.

photo by Jack Swedberg

Fin clipping provides valuable information on harvest.

Coldwater Fish Investigations

Surveys, inventories and creel census designed to evaluate the Division's current management programs form the majority of the coldwater investigations. Creel data from Quabbin Reservoir indicate 72,404 anglers caught 95,074 fish during 407,713 hours of fishing. Salmonids provided 27% of the harvest by weight while smallmouth bass continued to dominate the game species. Both salmon and lake trout catches were up significantly from the previous year. An estimated 1,345 lakers and 1,076 salmon averaging 5.1 lbs. and 1.8 lbs. respectively were taken while 1.3 lb. rainbows formed most of the salmonid harvest numerically.

Although the high water and significant rise in reservoir level aided lake trout production, heavy spring silt loads served to decrease smelt production. No smelt control was necessary during the spring of 1973 nor should it be in the coming years due to the installation of water intake screens to be completed in 1974.

Creel censuses were initiated on the Swift and Squannacook Rivers to assess species utilization, holding capabilities, angler harvest, and effect of the stream season extension.

Harvest of kokanee salmon, 201, at Onota Lake was much less than hoped for and provided very little in the way of increased angling.

During August and early September of 1972, the temperature profile and vertical distribution of dissolved oxygen was determined for 27 ponds. Twenty-one of these contained a volume of trout water in accordance with Massachusetts standards (70°F or less and 5 ppm or more of dissolved oxygen within the same layer). These volumes of coldwater habitat ranged from 1.5 to 100% of total pond capacity.

The brown trout / sea-run alewife forage relationship study at Higgins and Hathaway Ponds reached the halfway mark. As was the case with rainbow trout, young-of-the year alewives appeared to provide very little in the way of forage to brown trout and in fact may be detrimental to fast growth through competition for the invertebrate food base.

Biological and chemical surveys conducted at 77 stations throughout the 721-square-mile Chicopee River Watershed were completed. Since last surveyed, in 1943, relatively little change has occurred in most tributary streams; however, the disappearance of smallmouth bass from the watershed is significant.

Warmwater Fish Investigations

The northern pike population of Cheshire Reservoir continued to expand during 1972-73.

The winter harvest, 988 lbs., was almost double that of the previous year's catch. The release of 905 compared to 423 sublegal pike is a further indication that the pike population is increasing. The desirability of this species is evidenced by a significant increase in total pressure; an estimated 5,284 ice fishermen fished 31,693 hours December 1972 to February 1973.

Plans have been made to release 3,000 yearling northern pike in Brimfield Reservoir as soon as they become available.

The first experimental tire reef units were installed at Little Chauncey Pond, Westboro. Biologists will observe fish colonization and homing tendencies of the various species associated with these structures.

From May through November, 25 ponds were sampled to determine angling potential, species complex, abundance and growth rates.

Pesticide monitoring was continued on 20 rivers and indications are that hard pesticide levels are beginning to decrease while industrial pollutants, polychlorinated biphenyls (PCB) levels continue to increase. Since these pollutants act similarly to hard pesticides with respect to food chain concentration and effect, it is essential that their levels be constantly surveyed.

Pumped Storage Power Process Investigations

The first year of operational studies to determine the environmental impact of the Northfield Pumped Storage Project on the fish of the Connecticut River was initiated, while the second year of pre-operational studies concerning the effect of the Bear Swamp Pumped Storage Project on the fish of the upper Deerfield River continued on schedule. These studies are financed by the Northeast Utilities Service Company and the New England Power Company respectively. These studies include creel census as well as monitoring benthic invertebrate populations and water quality parameters.

Massachusetts Cooperative Fishery Unit

Seven investigations were financially supported by the Division of Fisheries and Game through the Cooperative Fishery Unit at the University of Massachusetts. Two students received Master's Degrees for their studies of shad behavior in the Connecticut River.

Other studies included ecology of kokanee salmon in Onota Lake, biology of spottail shiners, food habits of juvenile shad and game fish below Holyoke Dam and effect of mercury on early development of white suckers in the Mill River.

Respectfully submitted,
Peter H. Oatis
Chief Aquatic Biologist

STATE TROUT STOCKED 1972-73

	6"	6-9"	9-12"	12-14"	14+	Weight
SUNDERLAND						
Rainbow		19,500	90,000			85,091
Brook		70,000	4,900			14,756
Brown		23,400				4,700
Total		112,900	94,900			104,547
MONTAGUE						
Rainbow	32,000	2,650	78,000			73,159
Brook	15,500	34,500				6,796
Total	47,500	37,150	78,000			79,955
McLAUGHLIN						
Rainbow		23,630	188,097	97,939	4,360	144,797
Brook		16,000	52,729			19,570
Brown	18,000	66,638	3,000			21,678
Total	18,000	106,268	243,826	97,939	4,360	186,045
SANDWICH						
Rainbow	50,000	13,800	69,600			72 015
Brook		16,600	1,950			7 788
Brown	3,000	17,400	25 045			32,208
Total	53,000	47,800	96,595			112,011
TOTALS						
Rainbow	82,000	59,580	425,697	97,939	4,360	375,062
Brook	15,500	137,100	59,579			48,910
Brown	21,000	107,438	28,045			58,586
	118,500	304,118	513,321	97,939	4,360	482,558

	Number	Weight	Average per lb.
Rainbow	669,576	375,062	1 78
Brook	212,179	48,910	4 33
Brown	156.483	58 586	2 67
	1,038,238	482,558	

FEDERAL TROUT

	5-6"	6-9"	9+	Number
Brook	15,000	1 644		16 644
Brown	20 000	35 547		55 547
	35,000	37 191		72 191

STATE PRODUCTION SALMON

	Number	Weight
Coho Salmon	66 380	3 363
Kokanee Salmon	112 223	
Atlantic Salmon	1 200	134
Landlocks	19 850	1 458

photo by Jack Swedberg

WILDLIFE

Drake wood duck about to be released after banding.

Introduction

The arrival of wild turkeys from New York State during the fiscal year is cause for happiness among hunters and nature lovers alike. During the next few years Division personnel will be watching closely to ascertain the successful establishment of released birds. Additional stocking sites are planned already, and hopefully, with a truly wild strain of eastern wild turkeys in our woodlands the "year of the turkey" will be close at hand.

Our management program is expanding as manpower and finances permit. The acquisition of additional lands statewide has placed district personnel under a rigorous schedule of posting, boundary marking, development of public access sites, and general management and maintenance work. To meet the additional demands of an expanding program a fifth district has been established in the Connecticut River valley. Several years will be required before the district, quartered on the Swift River Wildlife Management Area, becomes fully operational and well-equipped.

The scope of game research and management activities performed by division personnel are highlighted in the pages that follow.

Statewide Beaver Harvest

A total of 1674 beaver were trapped by 105 trappers in 92 towns during the 1972-73 beaver season. This record take is 316 more than last season, and 600 more than a ten-year (1963-1972) average. Berkshire and Franklin counties together yielded 967 beaver (54.1% of the harvest). For the second season in a row, the take west of the Connecticut river increased, and that east of the river decreased. Over one-third (37.8%) of the beaver were taken in the first two weeks of the 15-week season. The average pelt price of $20, coupled with the high harvest, produced a record harvest valuation of $33,480.

Wild Turkey Restoration Study

Emphasis on the turkey restoration study has been shifted from the Quabbin strain birds of semi-game-farm ancestry to wild-trapped Eastern turkeys. Through the courtesy of the New York Department of Environmental Conservation, seven turkeys were trapped and transferred to Beartown State Forest, Berkshire County, in March 1972. This cooperative program continued in 1973 with the acquisition of ten additional turkeys (five adult males, four immature males, one adult hen), which were also released in Beartown. Further releases are planned for 1973-74. Should this stocking prove successful, surplus birds will be trapped and transferred to other areas in the Berkshire area, and thence to other suitable locations statewide.

Black Bear Study

Bear hunting showed an increase in popularity in 1972, with 420 individuals requesting a permit, as opposed to 200 in 1971, and 214 in 1970. All hunters were sent a questionnaire and 336 usable returns (80%) were received. Two hundred and thirteen persons did hunt bear in 1972, of whom 187 hunted specifically for bear, and 26 hunted only incidentally while bow-hunting for deer. The average bear hunter expended 16.8 hours during 2.4 days in pursuing his quarry. Berkshire and Franklin counties were the most heavily hunted, with the towns of Florida, Monroe, Rowe, and Savoy being favored locations. Sixteen hunters saw bear during the season and one hunter took a bear, a 165-pound female, taken in Savoy on opening day. This was the first bear legally harvested since 1969. One other bear was illegally shot in Royalston during deer week.

Hunters reported 179 bear sightings via the questionnaire. These and other current reports are being aggregated to determine the distribution of bear in Massachusetts. Concurrently, historical records of bear are being located in old books and papers, and a published bulletin on the history and status of the bear in Massachusetts and adjacent states is planned for mid-1974.

White-tailed Deer

The 1972 deer harvest totaled 2,291 animals of which 76 were taken during the three-week archery season. Sixty-six percent of the harvest (1,504 deer) were males; males comprised 61 percent of the 1971 harvest (1,385 of 2,284 deer).

The number of mainland antlerless deer permits was reduced from 6,000 to 4,000. Island permit allocations remained unchanged with Nantucket receiving 400 and Martha's Vineyard receiving 600. The total number of permits issued statewide, including landowners, was 5,326. Permit holders took 1,066 deer. Management goals are to expand the size of the deer population in areas that can carry more deer, and to increase the size of the deer harvest while maintaining a male:female harvest ratio of approximately 3 males per female.

Gosling Transplant Program

Twenty-six goslings six to ten weeks old were trapped and transplanted to western Massachusetts. Two complete checks of gosling transplant sites were made in the spring of 1972. Two broods hatched on the Quabbin Reservoir but only one brood of six goslings was observed. Both adults observed with the brood were color marked. A pair of adult geese and a brood were also observed at Thousand Acre Swamp, New Marlborough in 1971 and a nest of six eggs was located in 1972. Cooperators have reported three pairs of marked birds that have raised broods on or near release sites.

Preseason Waterfowl Banding

A total of 1,393 birds were banded during the 1972 preseason banding period. The number of birds banded by various techniques is as follows: airboat night-lighting 838 (30 birds banded with Great Meadows NWR bands); bait trapping, 249; cannon netting, 81; drive trapping, 126; nest box trapping, 69; miscellaneous, 30. Mallards (531), wood ducks (220), black ducks (149) and Canada geese (129) comprised the bulk of the bandings.

Despite a poorly running airboat, a record number of waterfowl and marsh birds were banded by this method during the 1972 season. The success rate of 41.9 birds per trip exceeded the 1971 high of 27.3 birds per trip.

Winter Trapping Program

State personnel along with three cooperators banded a total of 955 ducks at 22 locations using bait traps or cannon net. Four hundred sixty-nine ducks were banded on the coast as part of the regular winter trapping programs. Black ducks made up 81.9 percent of this total, mallards 10.6 percent, and mallard black hybrids, 7.5 percent. The park mallard winter banding program resulted in the banding of 378 mallards, 29 black ducks, 74 mallard X black hybrids and 5 mallard X domestic hybrids. The 1973 winter banding season was the poorest in several years.

Winter Inventory Flights

Winter inventory flights were made on 9-10 January 1973. Coastal Massachusetts from the New Hampshire to Rhode Island line was surveyed. The waterfowl count of 79,687 was down 38 percent from 1972, 40 percent from the ten-year average. Black ducks were down 22 percent from 1972, 16 percent from the ten-year average. Scaup, sea ducks (notably scoters) and Canada geese were also down. Buffleheads were up and goldeneyes remained unchanged from both 1972 and the ten-year average.

A November flight prior to the opening of the coastal gunning season revealed a build-up of puddle ducks and diving ducks as well as Canada geese above population levels normally observed during the November flights in past years. This is believed to be related to the special Massachusetts zoning hunting season. Hunting was not allowed in the coastal zone until late November.

Black Duck Imprint Program

One hundred thirty-two black ducks reared from eggs produced by black breeding stock at the Ayer Game Farm were held over winter at Ayer. Fifty-four females and 58 males were released on selected areas during the spring of 1973: 19 females and 18 males at the Ipswich Audubon Sanctuary, Topsfield; 13 females and 16 males at the Bristol Blake State Reservation, Norfolk; and 22 females and 24 males at a beaver park within the Quabbin Reservoir boundaries, New Salem.

Nesting cylinders had been erected on the release areas the previous winter. Nests were initiated in two of 10 cylinders at Topsfield, in three of 12 cylinders in Norfolk and in two of 15 cylinders located on beaver ponds in the Quabbin. All seven nests were successful although in one, only two of nine eggs hatched.

Evaluation of Starling-Proof Nesting Cylinders

Wood ducks nested in 17 out of 67 functional cylinders. Thirteen of the nests were successful; one nest was flooded out, one destroyed by a raccoon and two were abandoned for unknown reasons. One sparrow hawk nested successfully in a cylinder as did a black duck released during the black duck imprint study. Wood duck usage of experimental boxes has increased steadily since the inception of the program in 1970 when wood ducks nested in only 6 of 59 boxes. Area usage dropped, however during 1973, with wood ducks using cylinders on only four out of 19 areas versus six out of 19 in 1972. However, eight of the 19 areas involved in this year's study had no wood duck usage in either wooden boxes or cylinders. No starlings have nested in the cylinders since the start of the program.

Wood Duck Production Study

In 1973, emphasis was shifted from the study of general reproduction data to several specific dump nest studies. The first of these involved the development of an automatic color marking device that will mark incubating female wood ducks as they enter the nest box predator guard. While the device itself successfully marked birds, tests are being made to develop a better marking solution that will last several weeks on a bird.

A second study concerned the development of artificial dump nests by adding game farm wood duck eggs to normal sized nests. Previous studies in Massachusetts have indicated the wood ducks can frequently raise a larger number of ducklings than they normally do.

In conjunction with these studies, data was also collected on general reproduction. The results indicate a rising trend in the number of nesting wood ducks across the state. Production estimates based on data from 30 sites, indicate that wood ducks have increased in numbers slightly over 1972 with total production up 30 percent since 1970.

Game Farms

Efforts were continued to automate the rearing of day-old chicks by the use of automatic feeders. At the Wilbraham Game Farm, two brooder houses were equipped with automatic feeders as a result of obtaining surplus equipment through state agencies.

Rearing pen construction has been improved by the use of synthetic material for top wire. Nylon netting was used with excellent success at the Ayer Game Farm, which has reduced construction costs by 50 percent. Other maintenance work was comprised of building new bird house runways and guard fences.

Mortalities at several game farms were high due to an outbreak of sleeping sickness. Major mortality from eastern encephalitis occurred at the Wilbraham farm starting in late September. Over one thousand birds died among the growing stock as a result of this infection.

Following diagnosis of the infection at the Wilbraham farm, the immediate area was sprayed by helicopter using three ounces of malathion per acre to control the mosquito population. Affected groups were "specked" to prevent feather pulling which is known to be a means of transmitting the disease among pheasants following introduction by mosquitoes.

Although mortality among pheasants may be very high, the bird is a relatively poor host for the virus and is not an important host in transmitting the disease to other birds or animals.

GAME DISTRIBUTION

July 1, 1972 to June 30, 1973

PHEASANT LIBERATIONS:	
August — 12 weeks old	7,640
October — November	41,005
Sportmens Club Rearing Program	7,145
TOTAL	55,788
Miscellaneous Releases:	
Hybrids	821
Brood Stock (Spring release)	
Field Trials, Youth Hunt, etc.	1,103
QUAIL LIBERATIONS:	
Public Hunting Grounds	2,755
Field Trials	687
Brood Stock (Spring release)	
TOTAL	3,442
HARE LIBERATIONS:	
Distributed in March	1,591

Respectfully submitted,
Warren W. Blandin, Chief of Wildlife Research
E. Michael Pollack, Chief Game Biologist

Information and Education

Mass. Conservation Campers learn rifle shooting (top). Winners of awards for conservation-related activities (above).

PART of the I and E Section's function is assisting in the administration of the Conservation Camp. I and E input includes booking, collecting funds for participants, providing films and offering training in fish and wildlife conservation.

The Conservation Camp completed its 23rd session this year with 150 boys showing superlative interest, cooperation and overall good behavior. For the first time two boys won in two categories: Paul Pajak, sponsored by Mahar Regional High School, took first in rifle and casting. Larry Wood, sponsored by Wankinquoah Rod and Gun Club, placed second in archery and rifle.

Another I and E function that provides a lot of interest as well as some potentially valuable information is the freshwater fishing awards program sponsored by the Department of Commerce and Development and implemented by Fish and Game.

The state record lake trout — 13 lb. 6 oz., set in 1971 by Allan Storm of Gardner — was broken with a 13 lb. 10½ oz. fish taken July 4, 1972 by Joe Kulig of Palmer. Kulig held the title for one day, then lost it to William Harper of West Acton who took a 16 lb. 8 oz. laker. This last fish measured 34 inches, had a girth of 20 inches and was checked at Gate 8 of Quabbin. A 17 lb. 13 oz. laker caught by Paul Drenzek of Ware broke this record. The fish was 34¼ inches long, had a girth of 21¾ inches and was 11 years old.

The longest, but not the heaviest, fish ever reported into the freshwater fishing contest was registered by Richard B. Deres of Worcester. It was a northern pike measuring 46½ inches — one inch longer but three pounds lighter than the 24 lb. 6 oz. record fish taken from Onota Lake by Chris Ginthwain of Pittsfield.

A 10 lb. 28⅞ inch walleye taken by Eric Christenson of Stow broke the existing state record. The fish turned out to be 14 years old.

The I and E Section supported farmers on the Environmental Bill of Rights and the Farmland Referendum. Fish and Game was firmly committed to support the Massachusetts Citizens to Save Open Space in their effort to protect vanishing farmland, greenbelts and watersheds.

An appeal in a news release for a worm snake brought favorable response. At least three of these very small snakes were found along southern sections of the state and kindly donated to the Division to be photographed as illustrations for an article on snakes published in **Massachusetts Wildlife**. The article was written by Terry E. Graham and intended to offset fear of snakes. The dead giveaway to the only two poisonous snakes in Massachusetts (the copperhead and timber rattler) is the vertically elliptical pupil and pit or heat-sensing hole between eye and nostril.

Governor Francis Sargent signed into law a bill that sets apart the fourth Saturday in each September as National Hunting and Fishing Day. The I and E Section coordinated the Division's efforts in this regard.

The 1972 archery stamp featured an American Indian drawing. The idea was contributed by Mark Malchik with the printing design prepared by **Boston Globe** artist Cyril Neuwelt.

The Division worked with sportsmen in providing a "youth upland bird hunt" for 15- and 17-year-olds who had graduated from the state hunter safety course.

On September 28, 1972 the Division's administration discovered that the increase in license fees thought to go into effect on January 1, 1973 had to go into effect 90 days after signing of the bill because the effective date was omitted on the final draft.

The I and E staff took on one of the biggest jobs in its history in trying to locate 50,000 sportsmen before October 11, 1972 (the deadline for buying a 1972 license). After October 11 the same license that cost $5.25 cost $8.25, and an archery stamp cost $5.10 even though the stamp read $1.10. It was apparent that the Division had an obligation to contact all sportsmen. All types of media were used to the fullest. The Division owes a great debt to newspapers, T.V. and radio. Later, records revealed that 20,470 hunters and 1,462 archers were not contacted and paid the new price. From a positive viewpoint, over 30,000 hunters and 4,000 archers were informed and bought licenses at the old rates.

As if the Division didn't have enough problems in trying to locate 50,000 sportsmen and instruct them to buy their licenses, more public relations problems were heaped on us in the waterfowl field. The sea duck opening (scheduled for the 23rd of September) had to be postponed and all sea duck hunters located in order to protect them from the remote possibility of eating a bird contaminated by the red tide. Division officials felt that there was little danger, but better safe than sorry.

On October 14, the Fish and Game Board and administrative staff held a rededication ceremony at the Montague Hatchery to honor Ralph and Harold Bitzer whose combined service in fish hatcheries computed to 105 years.

At the dedication address, Fish and Game Director James M. Shepard pointed out the ceremony was also in honor of those sportsmen who have assisted in the construction and maintenance of certain facilities at the hatchery. In the 30's, sportsmen's clubs raised thousands of dollars for the "Montague Fund" earmarked for construction of tanks, pools, roads and tree planting. This kind of cooperative spirit continues today with citizens, sportsmen's clubs and leagues purchasing and giving land for wildlife habitat.

Fiscal 1973 will go down in history as one of the most difficult years for the Fish and Game Division's public relations effort. In addition to the two problems cited above, the printer failed to deliver the 1973 licenses on time. It was bad enough to think they would not be in for early Christmas sales; to find out that they would not even be in the hands of the Town and City Clerks until around January 15 turned the situation into a disaster. Fortunately Director James M. Shepard of the Fish and Game Division and Director Kenneth A. Crossman of Law Enforcement worked out a reasonable solution to the difficult problem by which an individual who planned to hunt, fish or trap within the framework of the law should participate and later be required to furnish proof that he had purchased a 1973 license as soon as the licenses were available.

A mistake made by a UPI writer on the dog-restraining order resulted in national confusion and eventually a correction. Meanwhile Fish and Game was criticized for its attitude evidenced by UPI-stated shoot-to-kill order on coyotes. (The UPI writer apparently thought dogs found in the wild chasing deer had to be coyotes.)

The Magazine

The theme of this year's annual report being "Ten Years of Progress," it seems fitting to briefly discuss the progress which has occurred in **Massachusetts Wildlife** over the past decade. In terms of format, the progress has not been as dramatic as we would have liked. We have obtained a color cover, but are still confined to 21 nine by six-inch pages.

Although **Massachusetts Wildlife** is the smallest of all the state magazines, it does enjoy a national reputation for journalistic excellence, containing

photo by Jack Swedberg

Director James M. Shepard (fifth from left) chats with sportsmen during fly tying demonstration on National Hunting and Fishing Day.

photographs and articles that consistently outshine material published in the much larger magazines.

Our paucity of paper has given us two unattractice alternatives: 1. say nothing and look pretty; 2. say something and look ugly. We chose the latter, using a cramped 8-point type face with no leading and leaving little white space in our layout. Although this makes the magazine less readable, those who are willing to brave the fine print get something for their effort.

We hope that in the future we will be able to obtain the funds necessary to publish a magazine that can compete in format with those of our sister agencies.

Usually, we try to print three in-depth feature articles per issue. Two are contributed by dedicated conservationists both inside and outside the Division for whom a chance to educate the public and possibly slow the pace of current environmental carnage is payment enough. The third is written by **Massachusetts Wildlife's** Managing Editor, who, as a paid employee of the Fish and Game Division, can afford to spend the time necessary to research and write an environmental article of the quality demanded by such journals as **Audubon** and **National Wildlife**.

As an education tool, **Massachusetts Wildlife** continues to decry environmental degradation, promote rapport between consumptive and non-consumptive users of wildlife, instill in the general public a respect for and understanding of life and the water and land that makes life possible, and keep the public informed as to what we as a conservation agency are doing to protect and restore the fish and wildlife resources of the Commonwealth.

It seems that traditionalists are at last beginning to accept the magazine's new role as an environmental journal instead of a sporting bulletin. Straight hunt-fish copy may be had at any newsstand for pocket change. We are not a hunting and fishing club, and the articles we publish on game and fish have to do with our management of these resources, not just how to harvest them. We are not equipped to compete with the three national hunting and fishing magazines, but as a local voice for the environment — which with increasing frequency is being correctly recognized as synonymous with hunting and fishing — we feel that we can offer the sportsman a very substantial return on the not-very-substantial portion of his license revenue allocated to magazine production.

High points in this year's volume of **Massachusetts Wildlife** in the three categories of Environment, Natural History, and Management include the following: Under Environment: "The Great Land Gouge and How to Curb it," July-August, an article supporting the farmland referendum; "The Rubbish in Our Wake," on the solid waste crisis, September-October; "Instant City," decrying the proposed rape of Warren, Mass., March-April. Under Natural History: "The Peregrine Symptom" and "Flowers Unseen," both in the July-August issue and dealing with the peregrine falcon and orchids respectively; "Feathered Jewels," September-October, on hummingbirds; "The Passing of the Heath Hen" and "Snakes of Massachusetts," both appearing in the November-December issue; "A New Look at Castor" and "The Squirrel Freak," both in the January-February 1973 issue and dealing respectively with beavers and flying squirrels; "To Shoot an Eagle," March-April, on photographing eagles in Quabbin; and "Meet New England's New Wolf," May-June. Under Management: "The Woodcock — Everybody's Bird," September-October; "Return of the Cavity Nesters," November-December (hooded mergansers and wood ducks); "Welcome the Wild Goose," on the Division's goose management program, January-February 1973; "Pond Reclamation," March-April; "Bugging Does Pay," on the electronic surveillance of wildlife, May-June.

Editorials by Director James M. Shepard dealt with: National Hunting and Fishing Day; land use; ignorance and prejudice concerning the new wolf; the energy crisis; the rape of our watersheds by such Federal bureaucracies as the Corps of Engineers, Soil Conservation Service, TVA and Bureau of Reclamation; and a plea to plug the hole in the Wetlands Act created by the infamous Agricultural exemption.

Respectfully submitted,
Richard Cronin
Chief of Information and Education

RETIREMENTS

Dorothy Childs — Retired 3-31-73 as Principal Bookkeeper from the Boston Office after 18 years' service with the Commonwealth.

Walter Covell — Retired 8-26-72 as Conservation Helper at the Sandwich State Game Farm after 19 years' service with the Commonwealth.

Roy Foster — Retired 4-30-73 as Conservation Skilled Helper at the Ayer State Game Farm after 21 years' service with the Division of Fisheries and Game.

Kenneth Mudgett — Retired 9-30-72 as Conservation Helper from the Ayer State Game Farm after 21 years' service with the Commonwealth.

Thomas F. Palmer, Jr. — Retired 1-31-73 as Conservation Skilled Helper from the Southeast Wildlife District after 21 years' service with the Commonwealth.

Albina P. Tessier — Retired 12-31-72 as Head Administrative Assistant, Boston Office, after 42 years' service with the Commonwealth, 22 of which were with the Division of Fisheries and Game.

Stanley Torrey — Retired 2-28-73 as Assistant Game Culturist at the Sandwich State Game Farm after 26 years' service with the Division of Fisheries and Game.

William Tyback — Retired 7-29-72 as Conservation Skilled Helper from the Sandwich State Game Farm after 21 years' with the Division of Fisheries and Game.

Richard Woolner — Retired 6-23-72 from the Westboro Field Headquarters as Wildlife Photographer after 13 years' service with the Division of Fisheries and Game.

Harry C. Darling — Retired 10-6-72 as Board member. Appointed to the Board, Division Fisheries and Game 12-13-62, 10 years' service.

LEGISLATION

Chapter

573 — An Act Further Regulating the Licensing of Propagators and Dealers of Certain Birds and Mammals and Increasing the License Fees therefor.
Approved July 6, 1972

580 — An Act Transferring Certain Land in the Town of Westboro from the Department of Mental Health and the Trustees of the Westboro State Hospital to the Division of Fisheries & Game.
Approved July 6, 1972

706 — An Act Further Regulating Licensing Programs and Fees Relative to Fish, Birds and Mammals.
Approved July 13, 1972.

782 — An Act Further Protecting the Inland Wetlands and Flood Plains of the Commonwealth.
Approved July 18, 1972.

784 — An Act Relative to the Protection of Wetlands.
Approved July 18, 1972.

156 — An Act further Regulating Trapping by Minors and the Issuance of Minors Certificate of Competency in the Safe Handling of Firearms.
Approved April 9, 1973.

206 — An Act Prohibiting the Issuance of Trapping Licenses to Certain Non-resident Citizens of the United States.
Approved April 19, 1973.

402 — An Act Relative to the Law, Shooting on Commercial Shooting Preserves on Certain Sundays.
Approved June 13, 1973.

REALTY

WITH the closing of the 71-72 fiscal year, it was sadly noted that monies from our existing bond issue were running dangerously low. We realized that the continuing acquisition of important uplands, providing areas for the pursuit of all outdoor recreation, would end all too soon. We are experiencing an era of expanding population coupled with an exodus from city dwelling to suburban living. This creates an insatiable appetite for land to accommodate sprawling shopping centers, multi-family complexes and a network of highways, all of which consume open space with reckless abandon. Lands lost to development are lands lost forever! The need for land has created a competitive and speculative market resulting in skyrocketing prices.

Fortunately, there are those who are conservation-minded and foresighted enough to realize the shortcomings of developing open space. This was the case of an acquisition in the Town of Charlton in Worcester County. Two hundred eighty-seven acres offering open fields, interspersed with hedgerows, surrounded by woodlands and complemented by marshes, provides an area where all species of wildlife are found. The owner of this property conveyed it to this agency at 50% below an offer made him by a developer. We sincerely appreciate his generosity.

Eighteen acres were acquired in the Town of Chesterfield in Hampshire County. This parcel, adjacent to the East Branch of the Westfield River, is assurance that the property will remain natural and open to the general public. This property is located in the well-known "Chesterfield Gorge," an area acquired by various agencies of the Commonwealth and providing a wilderness fishing and wildlife area.

Several parcels of property abutting the Crane Pond and Downfall Wildlife Management Areas in the Northeast were purchased. These acquired properties were in holdings or periphery lots in jeopardy of becoming house lots. The impact caused by the construction of a residence adjacent to a wildlife area is profound. The propagation of ill feelings toward hunting proliferates with each season. This feeling is mirrored by the posting of land. To circumvent this situation, the only avenue open is acquisition.

photo by Jack Swedberg

No Division activity is as critical to the future of hunting and fishing as the land acquisition program. Though man's work is painfully evident in this aerial shot of the Westboro area, the amount of undeveloped land is surprising.

An access area to the Millers River in Winchendon, Worcester County, was also acquired. This particular parcel, although small, has frontage on Route 12 connecting an 80-acre parcel previously purchased by this agency.

Access to Baker's Pond and parking space was purchased in the Town of Orleans in the County of Barnstable. Baker's Pond provides excellent fishing for trout.

Additional acreage was added to the Squannacook River, again insuring for the future. Sportsmen are to be commended for their initial land purchase and continuing cooperation here.

The Realty Section embarked on its wetlands acquisition program. The approval of Chapter 839 provided a sum of $5,000,000 to be expended for the acquisition of coastal wetlands and inland wetlands. The Hockomock Swamp located in the Towns of Easton, Raynham, and Taunton in the County of Bristol, and West Bridgewater and Bridgewater in Plymouth County, became one of the top priorities of the Realty Section. Preliminary acquisition procedure included researching land ownership within the area containing 5000-plus acres, determining the periphery of the area for amicable purchase or eminent domain, compiling a list of landowners and their addresses, etc., all time-consuming procedures.

A large-scale map had to be drafted which assembled all parcels by ownership found in the area of contemplated acquisition. This horrendous task was undertaken by Division personnel and volunteers. Persons interested in this project contacted the Division indicating a genuine interest in the eventual preservation of this valuable wetland.

Mr. Dennis Jolicouer, an engineer, was one of those interested enough to donate his expertise and time to draft a map depicting properties in the Hockomock. Long, tedious, eye-straining hours were put into compiling the map and this agency is exceptionally grateful to Mr. Jolicouer.

Special thanks is also in order for the assistance given by Mr. John Grant of Easton. Mr. Grant devoted considerable time and effort obtaining names of landowners in the Easton section of the "Hock." He was also responsible for directing the acquisition of some 137 acres of town-owned property by this agency.

Personnel in the Easton Town Hall are to be highly commended for their understanding, assistance, and readiness to help the Division of Fisheries and Game in its effort to purchase the "Hock." And to the many others who volunteered their services, too numerous to mention in this report, the Division extends its thanks.

Today, the Hockomock Swamp Acquisition Project is successfully showing signs of fruition.

Leaving the southeastern portion of our state, we travel to a deep, clear and cool lake in New Hampshire called Potanipo Pond, the birthplace of the Nissitissit River. This river winds toward the sea, entering Massachusetts in a small town in the northeastern section called Pepperell.

The Nissitissit meanders in serpentine grace to merge with the Nashua. Tall trees protectingly extend their limbs over this stream, keeping the water cool and shadowed. Thus is born a fine trout stream.

Realizing that this beautiful river was about to be raped by development, a group called the Nissitissit Watershed Association moved ahead with acquisition plans. This same group encouraged the Massachusetts Division of Fisheries and Game to acquire portions of the watershed in Massachusetts. To date approximately 75 acres are in various stages of acquisition, nearing finalization.

Plans to acquire marshland and adjacent uplands along the Parker River went beyond the stage of discussion and efforts towards this goal commenced. This project, too, is showing satisfactory results and will be commented on in the next annual report.

Respectfully submitted,
Floyd Richardson

Financial Report July 1, 1972 to June 30, 1973

RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES

Licenses		Price	Number	Gross Amount	Fees Retained by Town Clerk / city	Net Returned to State
1	Res. Cit. Fishing	* (5.25)	24,046	126,241.50	5,989.75	120,251.75
1	Res. Cit. Fishing	(8.25)	118,194	975,100.50	29,306.75	945,793.75
4-A	Res. Cit. Female Fishing	* (4.25)	5,558	23,621.50	1,385.25	22,236.25
2	Res. Cit. Hunting	* (5.25)	24,515	128,703.75	6,092.50	122,611.25
2	Res. Cit. Hunting	(8.25)	28,711	236,865.75	7,116.25	229,749.50
3	Res. Cit. Sporting	* (8.25)	4,997	41,225.25	1,246.25	39,979.00
3	Res. Cit. Sporting	(13.50)	46,908	633,258.00	11,629.00	621,629.00
4	Res. Cit. Minor Fishing	* (3.25)	2,468	8,021.00	615.00	7,406.00
4	Res. Cit. Minor Fishing	(6.25)	13,969	87,306.25	3,486.75	83,810.50
9-A	Res. Alien Fishing	* (9.75)	210	2,047.50	51.25	1,996.25
5	Alien Fishing	(11.25)	873	9,821.25	213.75	9,607.50
9	Non-Res. Cit. Fishing	* (9.75)	1,011	9,857.25	252.00	9,605.25
6	Non-Res. Cit. / Alien Fishing	(14.25)	2,578	36,736.50	636.75	36,099.75
7	Spec. Non-Res. Fishing	* (5.25)	1,829	9,602.25	456.25	9,146.00
7	Non-Res. Cit. / Alien 7-Day Fishing	(8.25)	460	3,795.00	113.75	3,681.25
8	Non-Res. Cit. / Alien Hunting (Sm. G.)	(20.25)	496	10,044.00	121.00	9,923.00
9	Non-Res. Cit. / Alien C.S.P. 3-day	(16.25)	35	568.75	4.25	564.50
5	Res. Cit. Minor Trapping	* (3.25)	72	234.00	18.00	216.00
10	Res. Cit. Minor Trapping	(6.25)	157	981.25	39.00	942.25
6	Res. Cit. Trapping	* (8.75)	178	1,557.50	44.00	1,513.50
11	Res. Cit. Trapping	(11.50)	440	5,060.00	107.75	4,952.25
12	Duplicate Licenses	* (.50)	1,345	672.50	-	672.50
12	Duplicate Licenses	(1.00)	2,083	2,83.00	-	2,083.00
10	Non-Res. Cit. / Alien Hunt.	* (16.25)	989	16,071.25	204.25	15,867.00
13	Res. Alien Hunting	(16.25)	395	6,418.75	6.00	6,412.75
14	Non-Res. Cit. / Alien Hunt. (B.G.)	(35.25)	343	12,090.75	84.25	12,006.50

15	Res. Cit. Sporting (over 70)	*FREE	3,087			
15	Res. Cit. Sporting (over 70)	FREE	16,011			
17	Res. Cit. Fishing (Blind & Para)	* (FREE)	194			
16	Res. Cit. Fishing (Blind & Para)	(FREE)	663			
19	Res. Cit. Hunting (Para)	* (FREE)	11			
17	Res. Cit. Hunting (Para)	(FREE)	78			
18	Res. Military-Naval Sporting	* (FREE)	1,746			
	Res. Military-Naval Sporting	(FREE)	697			
	* Rates Prior to Oct. 11, 1972		* 72,256	* 367,855.25	* 16,354.50	* 351,500.75
	After October 10, 1972		233,091	2,020,129.75	52,865.25	1,967,264.50
	TOTAL		305,347	2,387,985.00	69,219.75	2,318,765.25
	Refunds					136.25
						2,318,629.00

SUMMARY OF FISH AND GAME INCOME

Fishing, Hunting and Trapping Licenses	$2,318,629.00 *
Special Licenses, Trap Registrations and Tags	10,651.85 **
Archery Stamps	13,619.30
Rents	4,862.00
Miscellaneous and Sales	5,050.30
Court Fines	11,391.10
Refunds Prior Year	226.95
Pittman-Robertson Federal Aid	148,392.49
Dingell-Johnson Federal Aid	66,613.12
Anadromous Fish Projects Federal Aid	9,174.65
Mass. Mourning Dove and Woodcock Reimbursement	6,073.45
Reimbursement of Services	34,658.20
	$2,629,342.41

* See "Receipts from Fishing, Hunting and Trapping Licenses"
** See "Deposit"

OTHER INCOME — INLAND FISHERIES AND GAME FUND

Interest on Investments	$ 3,300.00
Gasoline Tax Apportionment	$295,562.95

Surplus in Inland Fisheries and Game Fund
as of June 30, 1973 - $444,051.07

HOW THE SPORTSMEN'S DOLLAR WAS SPENT

ADMINISTRATION					
Administration	2670-0001	$130,734.63			
Board of Fisheries and Game	2670-0001	158.48	$ 130,893.11		4
Information-Education	2670-0001		97,713.86		3
FISHERIES PROGRAMS					
Fish Hatcheries	2670-2300			464,873.45	16
Fisheries Management	2670-2300	$203,316.48			
*** Fish Restoration Projects	2670-2342	65,241.41			
Fisheries Management	2670-2400	125,257.14			
Fisheries Research Coop. Unit	2670-2341	7,500.00			
** Certain Anadromous Fish Proj.	2670-2322	20,711.00		422,026.03	14
WILDLIFE PROGRAMS					
Game Farms	2670-2400			325,649.03	11
Wildlife Management	2670-2400	$125,257.14			
Wildlife Research Coop. Unit	2670-2441	4,807.50			
* Damage by Wild Deer	2670-2451	8,438.25			
*** Wildlife Restoration Projects	2670-2461	225,501.24			
**** Eastern Dove Management	2670-2502	2,625.00		366,629.13	13
ENGINEERING AND CONSTRUCTION					
Repl. Hatch House, Sunderland	2670-2302	$ 49,942.72			
Repl. Upper Pools, Sandwich	2670-2305	64,927.00			
Constr. Storage Bldg., Newbury	2670-2463	12,178.00		127,047.72	4
LAND ACQUISITION					
* Land & Water Acquis. & Devel.	2670-9013	$ 185,289.70			
* Coastal & Inland Wetlands	2670-9016	12,123.80		197,413.50	7
DEPARTMENT OF NATURAL RESOURCES					
Natural Resources Officers Salaries and Expenses (26 .)	2620-1000	$251,738.50			
Supervision of Public Hunting and Fishing Grounds (100 .)	2620-0200	15,050.00			
Hunter Safety Training (100 .)	2620-0300	45,745.00			
Office of Commissioner (.4 .)	2600-0100	2,477.20		315,010.70	10.9
SECRETARY, ENVIRONMENTAL AFFAIRS (.2)	2000-0200			3,089.82	1
RETIREMENT ASSESSMENT (.2)	0612-1000			76,000.00	3
GROUP INSURANCE				60,078.84	2
INTEREST ON BONDED DEBT (100)	0699-2800			100,900.00	4
SERIAL BONDS AND NOTES (100)	0699-2900			250,000.00	8
				$2,937,325.19	100

* Continuing Appropriation
** 60 percent reimbursable Federal Funds
*** 75 percent reimbursable Federal Funds
**** 100 percent reimbursable Federal Funds

APPROPRIATIONS AND EXPENDITURES

Account No. and Title		Appropriation	Reserve	Expenditures and Liabilities	Total Reversion (including Reserve)
2670-0001	Administration	$ 249,150.00	$ 8,902.00	$ 228,606.97	$ 20,543.03
2670 2300	Fisheries Management	719,710.00	37,255.00	668,189.93	51,520.07
2670-2302	Repl. Hatch House, Sunderland	50,000.00	-	49,942.72	57.28
2670-2303	Pollution Abatement, McLaughlin Hatchery	15,000.00	-	-	15,000.00
2670-2305	Repl. Upper Pools, Sandwich	65,000.00	-	64,927.00	73.00
2670-2322	Anadromous Fish Projects **	22,000.00	1,100.00	20,711.00	1,289.00
2670-2342	Fish Restoration Projects ***	70,730.00	5,218.00	65,241.41	5,488.59
2670 2401	Wildlife Management	602,825.00	24,683.00	576,163.31	26,661.69
2670 2461	Wildlife Restoration Projects ***	241,100.00	14,625.00	225,501.24	15,598.76
2670-2463	Construction of Storage Bldng., Newbury Mgmt. Area	12,200.00	-	12,178.00	22.00
2670-2502	Eastern Dove Management ****	3,500.00	875.00	2,625.00	875.00
		$2,051,215.00	$92,658.00	$1,914,086.58	$137,128.42

		Continuing Appropriations	Reserve	Expenditures	Balance (excluding Reserve)
2670 2451	Damage by Wild Deer & Moose	$ 14,715 74	$185.00	$ 8,438 25	$ 6,092 49
2670 9013	Land Acquisition & Development	408,999 74		185,289 70	223,710 04
2670 9016	Coastal & Inland Wetlands	5,000,000 00		12,123 80	4,987,876 20
2670 9021	Pollution Abatement, McLaughlin Hatchery	92,900 00			92,900 00
2670-9022	Fish Screens, Quabbin Reservoir	110,000 00			110,000 00
2670-9023	Fish Rearing Facilities, McLaughlin & Palmer Hatcheries	47,100 00			47,100 00
		$5,673,715 48	$185 00	$205,851 75	$5,467,678 73

** 60 percent reimbursable Federal Funds
*** 75 percent reimbursable Federal Funds
**** 100 percent reimbursable Federal Funds

Freshwater Fish Records 1973

Species	Weight	Length	Girth	Place Caught	How Caught	Date	Caught by
LM Bass	10 lb. 15 oz.	23"	18½"	Norwich Lk., Huntington	bait casting	10-13-73	Lawrence LaCaresse, 47 Stonina Dr., Chicopee
SM Bass	5 lb. 7 oz.	21"	16⅝"	Quabbin Res.	bait casting	9-15-73	Henry Penny, 58 Jennings St., Worcester
N. Pike	25 lb.	45"	22"	Onota Lk., Pittsfield	live bait	2- 5-73	Ralph Fiegel, Yokum Rd., Richmond
Pickerel	7 lb.	25"	10½"	Rohunta Lk., Orange	spinning	9- 3-73	Joan I. Monahan, 45 Pratt Ave., Lowell
R. Trout	6 lb. ¼ oz.	26"	13"	Jamaica Pd., Jamica Plain	bait casting	9- 2-73	Frank Keegan, 14 St. John St., Jamaica Plain
B. Trout	8 lb. 14 oz.	28"	17½"	Spectacle Pd., Sandwich	spinning	7-22-73	John J. Pickrell, 8 Price St., Quincy
L. Trout	17 lb. 13 oz.	34⅛"	21¾"	Quabbin Res.	live bait	5-20-73	Paul J. Drenzek, 2 Cherry St., Ware
Shad	7 lb. 12 oz.	28"	17"	Indian Head R.	fly fishing	5- 4-73	Jerry Grozioso, 81 Whiton Ave., Quincy
Salmon	8 lb. 10½ oz.	31¾"	14½"	Quabbin Res.	fly fishing	4-17-73	John P. Yurkinas, 167 Vernon St., Worcester
Catfish	11 lb. 5 oz.	27"		Metacomet Pd. Belchertown	trolling	6- 1-73	Mike Owen, 13 Emerson Ct., Amherst
Walleye	11 lb.	29¾"	17½"	Quabbin Res.	spinning	6-11-73	Bob Methot, Pinebrook, Belchertown
Bluegill		12"	13¼"	Red Brook Pd.		73	Robert Silva, 61 Scraggy Neck Rd., Cataumet
		12"				73	Ernest Horn, 95 Turnpike Rd., Westboro
		12"				73	Clifford Razee, 42 Pleasant St., Chartley
Bullhead	3 lb. 8 oz.	19"	12"	Pembroke Res., Pembroke	live bait	5-28-73	Ron Smith, 99 Gladstone, Brockton
	4 lb.	19"	9¼	Mashpee Pd., Mashpee	bait casting	10- 8-73	Edmund B. Meslin, Anson Brown Rd., Johnston,
W. Perch	1 lb. 4 oz.	15½"	11½"	Davol Pd., Westport	bait casting	7- 5-73	James Kasper, 171 Plymouth St., Bridgewater
Y. Perch	2 lb.	16½"	9"	Flax Pd., Yarmouth	bait casting	8 - 73	Mark Kline, 93 Brandies Rd., Newton
Brook Trout	2 lb. 13 oz.	18"	12"	Rumford R., Foxboro	spinning	4-28-73	Donald J. Sapienzo, 272 Central, Foxboro
Calico	3 lb.	18"	14¾"	Ames Pd., Andover	ice tackle	1-23-73	William V. Twiraga, 60 Easton, Lawrence

STANDING ALL-TIME MASSACHUSETTS FRESHWATER FISHING RECORDS
Through December 31, 1973

Species	Weight	Length	Girth	Place caught	How caught	Date	Caught by
LM Bass	12 lb. 1 oz.	25¾"	21¾"	Palmer R., Palmer	bait casting	5- 9-63	George Pastick, Fall River
SM Bass	7 lb.	22½"	14½"	Lovells Pd., Barnstable		8-20-72	Marshall C. Hunter, Marion
N. Pike	25 lb.	45"	22"	Onota Lk., Pittsfield	live bait	2- 5-73	Ralph Fiegel, Richmond
Pickerel	9 lb. 5 oz.	29½"		Pontoosuc Lk., Lanesboro		1954	Mrs. James Martin, Stockbridge
R. Trout	8 lb. 4 oz.	26"	16"	Deep Pd., Falmouth	live bait	10-15-66	Roger Walker, Eastondale
B. Trout	19 lb. 10 oz.	31½"	22⅝"	Wachusett Res., Boylston	spinning	5-19-66	Dana DeBlois, Sterling
L. Trout	17 lb. 13 oz.	34½"	21¾"	Quabbin Res.	live bait	5-20-73	Paul J. Drenzek, Ware
Shad	8 lb. 8 oz.	28"		North R., Hanover	spinning	5-6-71	Richard C. Brown, Norwell
Salmon	9 lb. 5 oz.	27.1"		Quabbin Res.		9- 5-71	John E. Courtney, Auburn
Catfish	13 lb. 14 oz.	29.6"		Metacomet Pd., Belchertown		9-15-71	Wayne Briggs, Belchertown
Walleye	11 lb.	29¾"	17½"	Quabbin Res.	spinning	6-11-73	Bob Methot, Belchertown
Bluegill		12"				1973	Robert Silva, Cataumet
		12"				1973	Ernest Horn, Westboro
		12"				1973	Clifford Razee, Chartley
Bullhead	5 lb. 9 oz.	22½"	11½"	Conn. R., Hadley	live bait	6- 8-63	Mrs. Erna Storie, Chicopee Falls
	5 lb. 8 oz.	22½"	14"	Leverett Pd., Leverett	live bait	8- 2-65	Stephen Brozo, Amherst
	4 lb. 9 oz.	22½"	11½"	Conn. R., Chicopee	live bait	9- 8-65	Joseph Kida, Chicopee
W. Perch	2 lb. 12 oz.	17"	12"	Herring Pd., Plymouth	trolling	5-21-71	Manual P. Souza, Dartmouth
Y. Perch	2 lb. 5 oz.	17¾"		Wachusett Res., Boylston	spinning	4-23-70	Arnold Korenblum, Marlboro
Brook Trout	6 lb. 4 oz.	24"		Otis Res., Otis	spinning	6-24-68	Thomas Laptew, Granville
Calico	2 lb. 9½ oz.	18"	14"	Merrimac R., Lowell	spinning	6- 8-65	George Olsson, Lowell
	2 lb. 9 oz.	18"	13½"	Savorys Pd., Manomet	ice tackle	1-24-71	Charles Godin, Manomet
	3 lb.	18"	14¾"	Ames Pd., Andover	ice tackle	1-23-73	William V. Twiraga, Lawrence

Division of
FISHERIES and GAME
Field Headquarters
WESTBORO, MASS 01581

Second Class
POSTAGE PAID
at Worcester, Ma

ANNUAL REPORT

1974
AND
1975

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State House, Boston

THE COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME
100 CAMBRIDGE STREET
BOSTON, MASSACHUSETTS 02202

The Commonwealth of Massachusetts
Division of Fisheries and Game
State Office Building, Government Center
100 Cambridge Street, Boston 02202

MR
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His Excellency, Michael S. Dukakis, Governor of the Commonwealth, The Executive Council, the General Court and the Board of Fisheries and Game.

I have the honor to submit herewith the one hundred ninth and one hundred tenth annual reports of the Division of Fisheries and Game, covering the fiscal years of 1 July 1973 to 30 June 1974 and 1 July 1974 to 30 June 1975.

James M. Shepard
Director

State Library of Massachusetts
State House, Boston

Approved by Alfred C. Holland, State Purchasing Agent. Publication No. 8874

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The Board Reports

The Fish and Game Board is pleased to summarize highlights of the fiscal years 1974 and 1975, in the interest of economy, to a mimeographed document covering a two-year span from 1 July 1973 to 30 June 1975.

Fiscal 1974

Ground breaking for the first fishing pier ever constructed on an inland pond was begun at Cook Pond, Fall River, in July. The construction bid was awarded to D. W. White Construction Company of Acushnet in the amount of $77,000. An associated parking area and boat-launching ramp were included in the project, planned and engineered for the Division by Tibbetts Engineering Company of New Bedford.

At the Board's August meeting, Chairman Roger Williams welcomed a new appointee, Henry E. Russell of Brookline, to the Board. Mr. Russell, a former Board member, replaced long-time member and past Chairman Harry C. Darling of East Bridgewater.

In September, the Board voted to open to night hunting of raccoon those wildlife management areas not stocked with pheasant. Experimental openings were also approved for one year at the Swift River and Birch Hill Wildlife Management Areas where pheasant are stocked.

A limitation of 4,000 mainland antlerless deer permits was again approved to encourage further deer herd expansion, taking advantage of a low harvest and mild winter the previous year.

Encephalitis was present at two of the Division's game farms. An initial quarantine was lifted prior to the hunting season. The Division maintained close watch of the disease problem, identified by public health officials as an eastern strain of the disease. The overall effect of the outbreak was minimal and resulted in low pheasant mortality.

The Division's operating budget was approved at $2.6 million and four fisheries and three wildlife accounts were incorporated into single operating accounts.

The Board sought and obtained the assistance of the Secretary of Environmental Affairs in securing approval for negotiating, title search and appraisal services needed to accelerate land acquisition programs in the Hockomock Swamp in southeastern Massachusetts. As of October 1973, 2,700 acres were already under option. Funding was previously made available under a $5 million bond issue.

A ruling by the Attorney General supported the Board's contention that the Division's procedure in selecting antlerless deer permits did not constitute a lottery since application fees--used to defray administrative costs--were deposited into the Inland Fisheries and Game Fund. The program came unde review as a result of an accusation of the permit system by the Northampton City Clerk.

At the October 1973 meeting, the Board concurred that a meeting with the Secretary of Environmental Affairs would be held on 31 October at the Boston Holiday Inn at which time the latest proposals on governmental reorganization would be reviewed.

During the December meeting, the Board considered proposals relating to a non-game species program, year-round fishing on the Connecticut River and the naming of a special study committee to address means of working constructively with an anti-trapping group.

The energy crisis and its adverse effects upon Division programs stimulated planning at the Board's January 1974 meeting aimed at a reduction in fuel consumption of 25 percent while insuring program continuity.

Emergency regulations limiting the daily bag of northern pike to one and setting fishing regulations for Wallum Lake to coincide with those of Rhode Island were discussed and adopted at the March meeting. The Board also reviewed falconry regulations formulated by representatives of the M.S.P.C.A., Boston Zoological Society, Massachusetts Audubon Society, Massachusetts Division of Law Enforcement and Division personnel headed by Warren Blandin, Chief of Wildlife Research. A formal regulatory hearing on the proposed regulations was scheduled for 19 April at Greenfield.

Upon the suggestion of the City Council of Fall River, the Board voted to name the recently-completed fishing pier, parking area and boat-launching ramp at Cook Pond the Matthew J. Kuss Fishing Facilities, in honor of Representative Kuss who played a major role in conceiving and guiding the project through the legislative process.

A request of the Director was made by the Board to explore the advisability of seeking a five-year license for those over age 70 at a cost of $1 and to seek alternate and expanded licensing outlets. Recognition and appreciation was expressed for the donation of postage money to the Division by waterfowl hunting groups which would permit a waterfowl hunter survey regarding the concept of zoned waterfowl hunting seasons.

Nominations of Roger Williams to continue as Chairman and Bradlee Gage as Secretary were made and voted affirmatively. On whether to support a designation of the Parker River Wildlife Refuge as a wilderness area, the Board voted to favor instead a continuation of its existing status and instructed Director Shepard to record the Board's position at a 25 April hearing.

In order to encourage maximum reporting of returning Atlantic salmon previously released in the Connecticut River, the Board accepted the recommendations of the Fisheries staff and voted to establish emergency regulations allowing a legal taking of two Atlantic salmon per day with a minimum length of 15 inches in the Connecticut River.

At an evening meeting in Greenfield on 19 April, the Board at a public hearing voted approvals of year-round fishing on the Connecticut River and falconry rules and regulations as presented by Division biologists.

Division biologists at the June 1974 meeting proposed that for the purpose of improved deer management the Massachusetts mainland be divided into eight hunting zones. The Board approved the zoning proposal with antlerless deer permits to be allocated proportional to management objectives in each zone.

The first Massachusetts waterfowl stamp legislation was signed into law by the Governor (Sargent) in late June. Under the act, all waterfowlers are required by law to purchase a waterfowl stamp, eighty cents of which is expended by Ducks Unlimited, Inc. for protection and development of waterfowl habitat in the Atlantic Maritime Provinces of Canada--breeding grounds of most waterfowl passing through Massachusetts.

The Board expressed approval of the Division's progress with land acquisition and paid tribute to the Director and Realty staff for the substantial number of wetland acquisitions completed during the last year.

Fiscal 1975

After a lengthy series of meetings, studies and deliberations by the Board over a period of two years during which time numerous proposals for reorganization of state government were made to and by the Board, the final reorganization legislation was signed by the Governor on 16 August 1974--to become effective on 1 July 1975. Under its provisions, the Division of Fisheries and Wildlife (formerly Fisheries and Game) became, along with the Division of Marine Fisheries, the Division of Marine and Recreational Vehicles and Public Access Board functions, a member of a new Department of Fisheries, Wildlife and Recreational Vehicles headed by a Commissioner. Certain privileges were retained under reorganization--the appointment of the Director and approval of the Superintendent were retained by the Board, as were policy decisions and regulatory authority. Budgetary and personnel matters, however, came under the purview of the Commissioner and the Secretary of Environmental Affairs of the Executive Department.

With the effective date of reorganization, 1 July 1975, the Board adds two members (a wildlife biologist and one having particular interest in non-game and endangered species), bringing the Board's membership to seven.

At its waterfowl regulatory hearing in August, the Board also permanently adopted regulations allowing the taking, in the Connecticut River, of two Atlantic salmon per day with a 15-inch minimum length and it amended wildlife management area regulations by authorizing the Director to establish appropriate rules to control detailed situations peculiar to specific wildlife management areas.

On 27 September 1974, the Board heard a proposal at a public hearing to establish a statewide quail season. At its regular meeting on 25 October, the Board accepted the recommendations of the Division biologists that such a proposal was biologically unsound and it refused to vote an extension of the hunting boundaries beyond the five southeastern Massachusetts counties.

Considerable concern was exhibited by the Board during the fall over the extent and magnitude of agency budget reductions mandated by the administration. The Board held some fear that while buildings, equipment and programs were deteriorating, the Division's "surplus" account was continuing to grow and there remained concern that attempts to raid such a surplus for non-wildlife programs might be made.

A delay in the expected December delivery by the printer of 1975 licenses resulted in a joint administrative decision by the Directors of Fisheries and Game and Law Enforcement that holders of 1974 licenses would be able to lawfully participate in hunting, fishing and trapping until new licenses were received in January.

Emergency regulations were declared in December for the closure to the taking of northern pike through the ice in East Brimfield Reservoir, Holland Pond, Long Pond and the Quinebaug River. The purpose was to prevent overharvest of recently-introduced pike.

Because of anticipated crowds attending Bicentennial celebrations at Concord, the Board in January endorsed emergency regulations postponing by one day the fishing season opening at Walden and White's Ponds.

Fishing regulations were adopted at the April 1975 public hearing relative to exempting from the year-round season on the Connecticut River the Oxbow section at Northampton; increasing the minimal legal length of northern pike to 28 inches and reducing the daily bag to one; allowing only 2 brown trout per day with a minimum legal length of 15 inches at Quabbin Reservoir; making permanent the "Fly Fishing Only" areas on the Swift and Nissitissit Rivers; and initiating a catch-and-release experimental program designed to increase recreational opportunities on four designated ponds.

In May 1975, the Board voted to rename the Squannacook River Wildlife Management Area in honor of Peter E. Bertozzi of West Groton who, prior to his passing, had played a leading role in adding significant acreages of conservation lands to Division control for public recreation.

Budgetary concerns continued to attract a great deal of the Board's attention as well as the growing surplus, much of which was not interest-producing. Director Shepard was asked to explore with the Treasurer's office the advisability of increasing those surplus funds delegated to interest-bearing accounts from the historical level of $80,000 to at least $250,000.

The Board, in reviewing accomplishments of the previous year, felt that the Division's aggressive land acquisition program which provides multiple recreational and educational opportunities to all citizens without prejudice or discrimination is a source of satisfaction and a meaningful beginning upon which future administrations should build.

Respectfully submitted,

Roger D. Williams, Chairman
Bradlee E. Gage
Kenneth F. Burns
Martin H. Burns
Henry E. Russell

Warmwater Fish Investigations

Northern pike and largemouth bass provided the focal point of warmwater investigations. Creel census of ice fishermen at Cheshire Reservoir during 1974 revealed a sharp drop in both fishing pressure and harvest. However, the most alarming decline is in the release of only 29 sublegal pike. During the winter of 1972, 905 sublegal pike were reported released. It is strongly suspected that chemical control of weeds during the summer of 1972 inflicted heavy losses on the young pike that use such areas as nursery habitat. Efforts were also directed towards the establishment of a pike population in 420-acre East Brimfield Reservoir, Sturbridge. Approximately 3,000 yearlings averaging 14 inches were shipped from Red Lake, Minnesota and released late in December 1973. Since northern pike are relatively rare in Massachusetts and have a growth potential far exceeding that of the chain pickerel, regulations governing the harvest of this species were changed to take advantage of the greater growth potential of this fish as well as to use its predatory nature to prevent overpopulation of non-game species. Hopefully, the pike released in the reservoir complex will mature and spawn successfully during the spring of 1975.

Pumped Storage Power Plant Investigations

Two full years of post-operational investigations at the Northfield plant and the first year of operational investigations at the Bear Swamp plant were completed. Both investigations included analysis of creel census data, monitoring shifts in fish, invertebrate populations and water quality as a means of evaluating the alterations in the Connecticut and Deerfield Rivers resulting from construction and operation of these power projects.

Massachusetts Cooperative Fishery Unit

A great majority of the investigations supported by the Division of Fisheries and Game through the Cooperative Fishery Unit at the University of Massachusetts centered around shad investigations in the Connecticut River. Other studies included the effect of mercury deposition on early development of white suckers and evaluation of kokanee salmon in Lake Onota, Pittsfield.

Anadromous Fish Studies

The major highlights of the shad and Atlantic salmon restoration efforts included the completion of Phase I of the modifications to the fishway at Hadley Falls (Holyoke) and the capture of the first live Atlantic salmon from that fishway. The modifications to the Holyoke facility enabled 114,132 adult shad to enter the Holyoke pool. This figure represents a 75.4 percent increase over the best previous season, 1970, when 65,750 adult shad were passed. Additionally, two adult Atlantic salmon were recovered. One was taken by commercial fishermen operating in the lower Connecticut River and the other was found dead along the banks of the Connecticut River in Agawam. Approximately 10,000,000 fertile shad eggs were stripped from adult shad in the Connecticut River and transported to New Hampshire and Massachusetts sections of the Merrimack River during the springs of 1974 and 1975. Follow-up investigations of these egg plants revealed that significant shad-spawning territory is available in the upper reaches, a substantial run of shad can be anticipated in relatively few years. Spring netting of the Merrimack River failed to capture significant numbers of adult shad. It is believed that either those shad captured are strays wandering from their natal rivers or that very limited shad habitat exists below the dams at Lawrence and Lowell.

Respectfully submitted,

Peter H. Oatis
Chief Aquatic Biologist

State Trout Stocked
1973-1974 and 1974-1975

	1973-1974				1974-1975		
Hatchery	6"	6-9"	9-12"	12"+	6-9"	9-12"	12"+
Sunderland							
Rainbow		50,000	50,000			45,000	
Brook		20,000	25,000		65,000	30,000	
Brown		25,000	30,000		55,000	27,000	
Totals		95,000	105,000		120,000	102,000	
Bitzer							
Rainbow	20,000		75,000			73,000	
Brook	10,000	40,000			45,000		
Brown							
Totals	30,000	40,000	75,000		45,000	73,000	
McLaughlin							
Rainbow		112,000	157,000	12,000	112,000	164,000	14,800
Brook		80,000			138,000		
Brown		100,000			76,000		
Totals		292,000	157,000	12,000	326,000	164,000	14,800
Sandwich							
Rainbow			75,000		40,000	60,000	
Brook		15,000					
Brown		25,000	5,000			14,000	
Totals		40,000	80,000		40,000	74,000	
Palmer							
Rainbow			8,000		30,000	9,000	
Brook							
Brown			1,500				
Totals			9,500		30,000	9,000	

Total State Production of Trout

	1973-1974				1974-1975		
	6"	6-9"	9-12"	12"+	6-9"	9-12"	12"+
Rainbow	20,000	162,000	365,000	12,000	182,000	351,000	14,800
Brook	10,000	155,000	25,000		248,000	30,000	
Brown		150,000	36,500		131,000	41,000	
Totals	30,000	467,000	426,500	12,000	561,000	422,000	14,800

Wildlife

Introduction

Division efforts in wildlife research during fiscal 1974 and 1975 have focused on obtaining better information with which to manage the wildlife populations of the Commonwealth. Current projects range from studies on the history of management practices to basic life history studies, to reintroduction of native species, to management of existing populations. A proposal for a non-game and endangered species wildlife program was presented to the Legislature in December 1973 but the bill was still under consideration at the end of 1975.

White-Tailed Deer Project

The one-week shotgun season accounted for the largest portion of the total deer harvest. In 1973, a total of 2,037 deer were taken, followed by 2,666 in the 1974 season as the herd continued to increase. Antlerless deer permits were issued at the same level (5,000) in both 1973 and 1974, and farmer-landowner antlerless deer permit requests were also at about the same level, 349 and 358, respectively. The total kill ratio of males to females taken in the harvest similarly indicates a healthy harvest situation with 1,477 males to 644 females in 1973 and 1,949 males to 832 females in 1974. This ratio is what it should be in light of our management objectives.

Three additional autumn deer seasons were offered in 1973 and 1974. The three-week archery season harvest was up from 77 in 1973 to 87 in 1974. The paraplegic season produced the first successful hunters in 1974 on Martha's Vineyard when deer were taken by two of the 14 participants. The three-day primitive firearms season following the shotgun season produced a harvest of seven deer in 1973 and 26 in 1974.

The total harvest in 1974 of 2,781 deer was up about 30 percent, or 660 animals, over the 2,121 taken in 1973.

Non-hunting deer mortalities reported by Natural Resource Officers for the two-year period, 1973 and 1974, were as follows:

Mortality Cause	Number of Deaths in 1973	Number of Deaths in 1974
Automotive	322	329
Dogs	36	23
Illegal	23	34
Drowned	9	11
Others and Unknown	30	33
Totals	420	430

Statewide Beaver Harvest

A total of 1,639 beaver were taken by 123 trappers in 106 towns during the 1973-1974 beaver season. Berkshire and Franklin Counties together yielded 888 beaver, or 54.2 percent of the harvest. Over one half (53.6%) of the beaver were taken in the first two weeks of the 15-week season. The approximate point-of-sale value of the harvest was $29,500.

Harvests dropped slightly in 1974-1975, with 1,441 beaver being taken by 115 trappers in 102 towns. This take was 198 less than in 1973-1974, but 247 more than the ten-year (1965-1974) average. Berkshire and Franklin Counties together yielded 838 beaver. Again, one half (721) of the harvest was taken in the first two weeks of the season. The approximate point-of-sale value of the harvest was $36,025.

Mourning Dove Census

Calling doves were counted on three randomized census routes in cooperation with the U.S. Fish and Wildlife Service's annual mourning dove breeding population census. The total number of calling doves in the spring of 1974 decreased nearly two thirds as compared to 1973 counts. In 1975, however, the total number of calling doves increased 11.5 times over 1974 on two comparable routes. Analysis of long-term trends, nevertheless, indicates a significant downward trend in Eastern Unit dove populations.

Spring Quail Census

The 1973 spring quail census in Barnstable, Bristol, and Plymouth Counties showed no statistically significant difference in call indices from the 1971 average or from a four-year (1958-1961) average. In 1975, however, Bristol County showed a significant decrease from the 1958-1961 index, and Plymouth County showed decreases both from the 1958-1961 and from the 1973 call index.

Experimental Turkey Stocking

Through the courtesy of the New York State Department of Environmental Conservation, Division of Fish and Wildlife, a number of wild-trapped turkeys were again made available for transplanting to Massachusetts. In September 1973, twenty turkeys (five adult hens and fifteen poults) were captured in Allegany State Park, New York, and released in Beartown State Forest, Berkshire County, bringing the total released since spring 1972 to 37 turkeys.

Sightings were uncommon for the first year, but reports since then indicate that birds have dispersed east and west of the release site, and one report of a brood was received during the summer of 1974. Should reproduction and dispersal continue as projected, the Beartown flock will be used as a source of stock for future statewide releases.

Black Bear Population Dynamics

During the fall of 1973, applications for bear hunting permits were received from 309 sportsmen. No bears were reported taken during the open season, though one cub was killed by an automobile earlier in the year. Two instances of problem bears were investigated, both involving citizens who unnecessarily harassed bears, thus leading to confrontations.

In 1974, bear hunting permit applications were received from 390 sportsmen and two bear were taken during the open season. Two instances of nuisance bears were investigated.

A comprehensive report on the history and status of the bear in Massachusetts is nearing completion.

Trap Study

A committee was appointed in early 1974 by Director Shepard to study the problems of and alternatives to the steel leghold trap. The committee, composed of trappers, non-trappers, and professional biologists, initiated an intensive information-gathering effort which resulted in the rather shocking and inescapable conclusion that there was no reliable basis for answering questions that underlie a rational revision of trapping in the direction of minimizing pain. Consequently, the committee recommended to Director Shepard a detailed study designed to evaluate several trapping devices.

This study has been designed and reviewed by biologists from all over this country and Canada. Support for the study is provided by the Federal government, the Canadian Association for Humane Trapping, the Division, the Massachusetts Society for the Prevention of Cruelty to Animals and the Woodstream Corporation.

Gray Squirrel Study

Squirrel hunting regulations were evaluated from other states in an effort to determine why squirrels were not a more popular game animal in Massachusetts. Results showed most states ranked squirrels as a top game species. The popularity of squirrel hunting was significantly related to the length of the season before leaf fall. On the average, about 40 percent of the season in other states occurred before leaf fall, but in Massachusetts the season does not open until after leaf fall. Massachusetts also has the second shortest squirrel season (41 days) in the nation while the average is 120 days.

Recommendations are being prepared in an effort to increase the utilization of this resource.

Grouse Habitat Studies

The forests of the state have generally grown past the optimum habitat stage for ruffed grouse and the potential value of the timber resource has increased steadily. Realizing that this resource will be harvested sometime in the future, the Division has begun to investigate the possibilities of stimulating production of good ruffed grouse habitat through normal timber harvesting operations. Cooperation with the Division of Forests and Parks and the University of Massachusetts is being investigated in order to provide the best study design for this work.

Gosling Transplant Program

In fiscal year 1974, a number of Canada goose drive trapping operations occurred in eastern Massachusetts. Fifty-seven goslings were captured and transplanted to four sites in central and western Massachusetts and 52 other geese were banded and released. During fiscal year 1975, forty-two goslings were transplanted and 27 other geese banded. Brood checks that year confirmed three broods of goslings by transplanted adults and three other broods of probable transplant origin. An analysis of recovery data indicated a 24 percent recovery rate for all geese transplanted since 1967 with approximately half the birds being recovered out of state.

Preseason Waterfowl Bandings

Preseason banding work followed gosling transplant activities. However, budgetary problems which prevented needed airboat repairs eliminated nightlighting and curtailed bait trapping activities during the summers of both 1973 and 1974. As a result, only 262 wild ducks were banded during the 1974 preseason trapping operations although 163 park waterfowl were also banded. In 1974, a total of 354 wild birds and 402 park ducks were banded.

Winter Inventory Flights

Winter inventory flights were flown during the first full week of January in 1974 and 1975. Coastal Massachusetts from New Hampshire to the Rhode Island line was surveyed, including Cape Cod and the Islands. The total waterfowl count in 1974 was 127,043, up 59.7 percent from 1973 and down 4.7 percent from the ten-year average. Black ducks were up 15.4 percent from 1973, down 7.5 percent from the ten-year average. Mallards, bay ducks, sea ducks and Canada geese were all up over 1973. The 1975 count of 120,278 waterfowl was down slightly from 1974 and the ten-year average. Black ducks were down 23 percent from 1974. Mallards, most bay ducks, sea ducks and Canada geese were up over the 1974 counts.

Winter Trapping Program

During 1974, state personnel along with three cooperators banded a total of 1,917 ducks at 30 locations using bait traps and cannon nets. Some 524 ducks were banded as part of the regular winter black duck trapping operation (78 percent blacks). The park waterfowl program netted 1,189 mallards, 33 black ducks and 165 mallard-black hybrids. A total of 2,247 waterfowl were banded at 32 locations in 1975; 1,120 during black duck banding work (81 percent blacks) and 1,127 during the park waterfowl phase of the program (85 percent mallards).

Black Duck Imprint Program

During the spring of 1974, a total of 45 female and 55 male black ducks were released on three sanctuary areas in eastern and central Massachusetts. Nesting cylinders had been previously erected in 1972. In addition to the 1974 release, an unknown number of black ducks released in 1973 had overwintered in the vicinity of the release sites. A total of ten nest attempts were recorded on the sites of which nine were successful. Nests were established in cylinders by both 1973 and 1974 released birds.

Game farm-held black ducks produced over 700 eggs but faulty incubators and high duckling mortality rates limited production. Approximately 200 black ducks were reared to flight stage.

A total of 125 female and 111 male black ducks were released in the spring of 1975. These included both yearling birds and surplus breeding stock. One or more nests were established on five of six release sites. Nests were established by eleven of the 1975 released hens while three hens released in previous years returned to nest. A total of 110 black ducklings were hatched in cylinders. Further releases of 21 female and ten male black ducks were made during midsummer of 1975 as this project is considered unsuccessful and will be terminated.

Park Waterfowl Investigations

A summer park waterfowl census of the greater Boston area was conducted in 1974. A total of 2,071 mallards and 248 black ducks was observed on 56 different areas (40 percent of available sites). The summer count was approximately 56 percent of the winter count conducted on the same geographic area during January 1973.

Two special censuses to count broods were run the summer of 1975, one in May and a second late June-early July. These censuses revealed that there was brood production on 41 percent of the wetlands within the greater Boston areas and that there was an average of 2.4 broods per area. A total of 2,673 waterfowl was seen of which 675 were ducklings.

Evaluation of Starlingproof Nesting Cylinders

During 1974, wood duck nest starts were recorded in 27 out of 82 cylinders. However, only sixteen nests were successfully incubated to term. Cylinders were used on eight of 22 areas, fourteen of which had concurrent wood duck usage in wooden boxes. In 1975, there were 22 nest starts on five areas of which fifteen were successful. Web tagging data indicate that there is no strong tendency for wood ducks hatched in cylinders to return to cylinders to nest, but rather that wood ducks hatched in cylinders may nest in wooden boxes as frequently as they do in the cylinders. No starling nests have been recorded in the cylinders since the program was initiated in 1970.

Wood Duck Dump Nesting Study

A wood duck dump nest is a nest in which two or more wood ducks lay eggs but only one hen incubates the clutch. Dump nests normally make up about 25 percent of the nests found in Division boxes. The waterfowl research crew is attempting to learn more about this biological phenomenon through a series of research projects.

One project tested the effects of the prior presence of eggs in a box to determine if wood ducks that dump nest, but do not incubate later, establish a nest of their own. Several marking devices were tested under both laboratory and field conditions in 1974. Further tests were conducted in 1975. The use of a rubber-band collar with a colored vinyl tag promises to be the most feasible, with a 67 percent success rate.

Release of Hand-Reared Wood Ducks

The release of twelve pairs of adult wood ducks on two beaver ponds of the Quabbin Reservoir in April of 1975 resulted in two confirmed nests by released hens and a third successful nest believed to be the product of a released hen. The release of five adult hens at Turkey Hill Brook, Paxton, resulted in one hen establishing a successful nest.

Game Farm Research

During the two-year reporting period, a cooperative research project on Eastern Equine Encephalitis in pheasants was continued with the Department of Veterinary Science at the University of Massachusetts and the Massachusetts Department of Public Health.

Many blood samples were collected from representative pens of pheasants on all three game farms. When work on these samples is completed we should have a better understanding of the epizootiology of the disease by comparison of numbers of serums with antibodies before and after clinical disease. Virus isolations at the Ayer farm demonstrated that the infection occurred in a considerable number of pens without appreciable clinical signs or mortality. Fitting the birds with anti-pecking "peepers" is credited with being effective in minimizing transmission of infection and mortality.

One controlled experiment has been completed to evaluate the effectiveness of a commercial adjuvanted E.E.E. vaccine for pheasants, a product widely used in pheasants in New Jersey. Little or no protection value was demonstrated, although as much as one half a horse dose was used twice at a four-week interval before challenge. All vaccinated birds also developed viremia following challenge. A second trial is in progress.

A member of E.E.E. virus isolates has been screened to determine if there are marked differences in virulence for pheasants among field isolates. A few of the isolates tested have limited ability to kill pheasants; most of the isolates from mosquitoes, horses and songbirds can kill pheasants without adaptation.

Management

Efforts to increase automation at all game farms, especially in the brooding of pheasants were stepped up during these fiscal years. This has resulted in large labor savings. Surplus equipment acquired from other state agencies has allowed the Division to install automatic feeders in one breeder house at the Wilbraham Game Farm.

Routine maintenance, repair and construction was done at all farms. Feed formulas and feeding procedures were revised which resulted in a decrease in feed costs.

Respectfully submitted,

Chet M. McCord
Chief of Wildlife Research

E. Michael Pollack
Chief Game Biologist

Game Distribution

Pheasant Distribution	7/1/73 to 6/30/74	7/1/74 to 6/30/75
August	8,940	9,298
October-November	43,164	44,010
Sportsmen's Club Pheasant Rearing Program	6,035	5,543
Miscellaneous (youth hunt, displays, etc.)	185	146
Brood Stock (spring releases)	5,185	1,772
Hybrids	200	-
Field Trials	(24) 898	(18) 802
Totals	64,607	61,571
Quail Liberations		
Public Hunting Grounds	1,960	2,880
Field Trials	(10) 483	(10) 502
Totals	2,443	3,382
Hare Liberations		
Released in January and February	109	1,110

Information and Education

Increasing public interest in wildlife and the environment is reflected in the magnitude of postal inquiries, estimated at over 10,000 during fiscal 1974 and 1975, handled by the Information-Education staff. Although many requests can be satisfied by return mailings of preprinted information, an increasing number demand a response--possible only by personal and sometimes lengthy correspondence.

The production of informative materials attempts to reduce inquiries by the timely dissemination of facts. During the reporting period, 33 general news releases and nine mailings to outdoor writers were produced. Staff members published and maintained a library of 200 maps of popular fishing ponds and 44 maps of wildlife management areas for the benefit of fishermen and hunters.

Responsibility for coordination and reservation bookings for the Junior Conservation Camp falls annually to the I and E Section as well as participation in training programs offered to the 150 boys who attend.

In cooperation with the Massachusetts Department of Commerce and Development, the Division's I and E staff supervises the Massachusetts Sports Fishing Awards Program involving year-round review of freshwater fish entries in seventeen categories. This program has clearly established Massachusetts as a producer of record fish unsurpassed in the Northeast.

The educational effort is extended throughout the state by means of exhibits, demonstrations, radio and television specials and audio-visual aids of infinite variety. The staff prepared or assisted at twelve major exhibits during the two-year period including annual appearances at the New England Sportsmen's Show at Boston and the Eastern States Exposition in Springfield. The 1974 exhibit featured a variety of shore birds and the 1975 show included a pair of river otter--both exhibits telling of the variety of native Massachusetts wildlife and the importance of protecting suitable wildlife habitat.

The Division's bimonthly magazine, Massachusetts Wildlife, continued to publish timely and thought-provoking articles on land use problems, wildlife of the Quabbin Reservoir area, the eastern cougar, black bear, the Merrimack River and numerous other environmental and wildlife-related subjects. The publication is a function of the five-member I and E staff but major responsibility falls to the managing editor. Massachusetts Wildlife consistently included three or four major articles in each issue although handicapped by limitations on both space and size. A format greater than the current 9 by 12 inch page size would be highly desirable and could more effectively utilize the excellent photography produced by the Division's two wildlife photographers. Regrettably, budget limitations prevented the publication of the May-June 1975 issue.

The I and E staff employed several methods to publicize the construction and dedication of the Division's first fishing pier built at Cook Pond, Fall River. The project warranted a high degree of exposure since it marked a new approach to improved fishery management in an urban area and included original design engineering to facilitate use by handicapped anglers restricted to wheelchairs.

At the request of the court, extensive publicity was given to the apprehension and subsequent conviction of vandals who wantonly slaughtered prime trout displayed in the visitor pool at the Division's McLaughlin hatchery in Belchertown. It was suggested by the hearing's judge that the excellent police work by Natural Resource Officer Albert Brighenti and other investigators together with wide news coverage might be a deterrent to others who might contemplate similar vandalism.

Upon the passage of the first waterfowl stamp law in Massachusetts, the I and E section began a search for appropriate art work and selected a fine painting of a decoy from among several submitted. Thus began a series which the Division intends to perpetuate at a high level of printing and art quality, a factor which should make the Massachusetts stamps of interest to collectors.

The production of audio-visual material was severely reduced by budgetary limitations but the Division's staff photographers developed a full length, 52-minute documentary on native animals and wildlife management in the Quabbin Reservation as well as several thousand feet of footage to be subsequently combined with other footage in the development of new film presentations. In addition, two prime-time film shows on the life history of the beaver and the wild turkey were prepared for showing over Channel 6, New Bedford, and three one-half hour wildlife films were developed for showing on Channel 57, Springfield. On seasonal events or unusual wildlife-related stories, thirty brief short-run specials were made and used in news broadcasts by Channels 4, 5 and 7, Boston.

Films and 35mm slide shows dealing with fish and wildlife research and management were prepared for use by Division biologists in conjunction with their educational activities. An estimated 200 showings were recorded during the reporting period of all types of films. Most of these were used at schools, sportsmen's clubs, environmental citizen groups and exhibits.

The Division continued to provide color and black and white prints to wire services and various news media relating to Massachusetts wildlife and associated recreation.

I and E staffers appeared on six talk shows for Channel 6 and presented programs at scores of gatherings of conservationists and educators across the state.

Respectfully submitted,

Richard Cronin
Chief of Information and Education

Realty

An aggressive land acquisition program continued to provide lasting protection for fish and wildlife resources of the Commonwealth by bringing under the control of the Division 3644.5 additional acres during Fiscal 1974 and another 2252.25 acres in 1975. Most acquisitions were wetlands with funding provided by a $5 million bond issue approved in Fiscal 1972. Program emphasis was placed on acquisitions of lands bordering existing wildlife management areas and other publicly-accessible recreation lands and waters. At the close of Fiscal 1975 it is evident that new funding will be needed to continue the essential program of permanently protecting fish and wildlife habitat in both wetland and upland locations. The Division is most grateful for the continuing interest shown by generous donors of wildlife lands, a number of whom made significant gifts to the Commonwealth during the reporting period.

Hockomock Acquisition Project

The Hockomock Swamp reputedly is the largest remaining inland wetland in New England. The attributes possessed by this unique and remarkable natural resource are many and the swamp's worth challenges the expertise of those who would attempt to attach to it a value in dollars and cents.

To permanently protect this significant wetland (a mere forty-minute drive from downtown Boston), the Division initiated its largest single acquisition project ever attempted early in June of 1972. Progress was slow during the early stages of the program. However, the assemblage of parcels began when in Fiscal 1974 a total of 1,078 acres of Hockomock became public domain, and in Fiscal 1975 an additional 1,499 acres were purchased.

The properties acquired were as varied in their utilitarian roles as they were irregular in shape. Road frontage was acquired on every major highway within the project area to insure access. Properties bordering the Snake River, Hockomock River, Town River and Black Brook were also protected as well as shore property on 354-acre Lake Nippenickett and Nunkets Pond.

Ownerships were obtained by negotiated purchase. Acquisitions by this process usually require repeated visits to the landowner before an agreement is reached. The involvement of time, consequently, is considerable.

Parker River Acquisition Project

In the Town of Newbury, Essex County, picturesque farmlands once provided a livelihood for those who tirelessly and patiently "lived with the land". Fields of timothy, brome grass, and lush clover furnish food and cover for the countless species of wildlife found here. These farmlands are embellished by adjoining marshlands. Such marshlands, nourished by the beautiful Parker River, provide high-quality habitat for shorebirds, waterfowl and aquatic mammals.

A Division application for Federal funding assistance, through the Bureau of Outdoor Recreation's Land and Water Conservation Fund (B.O.R.), was submitted and approved. Subsequent to the approval, the estate of the late John P. Marquand, a noted author, was purchased. Four hundred seventy-seven acres, the nucleus of the project, was conveyed to the Division in 1974, and in Fiscal 1975, another 237 acres was added.

Crane Pond

Two acquisitions in Fiscal 1975 of 111 acres in Georgetown, Groveland and West Newbury bring the total acreage of this wildlife management area to 2094.9.

Swift River

Three hundred acres in Ware, including a modern 10-room house and garage, and 3,600 feet of river frontage were purchased, adding significantly to the total value of the Swift River Wildlife Management Area--now encompassing 1418.5 acres and offering further protection to a fine trout stream.

Westboro

Via a transfer from the Department of Mental Health and the Trustees of Westboro State Hospital, 153 acres of woodland and shore frontage on Lake Chauncey was added to the Division's Westboro Wildlife Management Area in Fiscal 1975.

Housatonic River

Acquisitions in Pittsfield, Lenox and Lee have enlarged Division holdings in this river valley to 485.7 acres and have provided, in addition to public open space protection, an additional 5,000 feet of shoreline on Woods Pond and 4,600 feet of frontage on the Housatonic River. The area is rich in fish and wildlife including waterfowl and furbearers.

Millers River

Protection of huntable land for deer, hare and grouse was the object of the Fiscal 1974 acquisition of 853 acres of unspoiled land adjacent to the Division's Millers River Wildlife Management Area in Athol and Royalston. This important acquisition connected other Division properties forming a unit of 1,553 acres, and insures excellent access to a major river which may offer prime fishing as pollution abatement progresses.

Peterson Swamp

In Halifax, 250 acres of forest, wooded swamp, marsh and open fields was purchased in an area between Monponsett Pond and Silver Lake.

Additions to Existing Lands

During the reporting period, land purchases were made which added to and further protected Division holdings at the Squannacook Wildlife Management Area, Shirley; Rocky Gutter Wildlife Management Area, Middleboro; Mill Creek Wildlife Management Area, Rowley, and Pantry Brook Wildlife Management Area, Sudbury. Additional salt marshes in Rowley and Salisbury were acquired which brought the total coastal wetlands designated as the North Shore Wildlife Management Area to 310.2 acres. Federal Aid to Fisheries Restoration funds assisted in the purchase of 183.63 acres adjacent to the Nissitissit River Wildlife Management Area and the Division acquired 1.7 acres adjacent to the Sandwich State Fish Hatchery as added protection.

Gifts

During Fiscal 1974 and 1975, gifts of land totalling 459.3 acres were deeded to the Division. They included a 15-acre island in the Connecticut River donated by the Connecticut River Watershed Council, Inc. Shepherd Island was formerly used for an anchoring point for cables stretching to the river's east bank as booms to intercept newly cut logs headed downriver. A sandy beach stretches along the wooded island's easterly shore and from its westerly shore one can observe a sheltered mainland cove where migrating waterfowl stop to rest and feed.

Once again the Middlesex County League of Sportsmen's Clubs has made a significant contribution with the presentation to the Division of a twenty-acre parcel in Pepperell, situated on the Nissitissit River. This gift of frontage on a trout stream considered by many to be one of the finest in the state, will help to insure the perpetuation of quality freshwater angling for generations to come.

In Chester, a 267-acre tract of woodland with frontage on Walker Brook, a state-stocked trout stream, was deeded to the Division by Kelly Enterprises, Inc., a Pittsfield lumber company. The property also includes an abandoned emery mine, one of the few locations in Massachusetts where the endangered Indiana bat is found. Hunters will benefit, too, from this most generous gift since the area is good habitat for deer, grouse and hare.

A gift of .3 acres further strengthened the holdings of the Division at its Bitzer Fish Hatchery in Montague, named for Harold and Ralph Bitzer, two former employees of the Division, the latter of whom is also the donor.

Finally, lands in Northbridge, Mendon and Uxbridge, along both banks of the West River, were given to the Division by E. Kent Swift, Jr. This 157-acre area includes a variety of habitat types--large open fields, hedgerows, stone walls, apple trees, forests and wetlands. The hunter and non-hunter alike will find much to enjoy in this diverse area and the trout fisherman will appreciate the excellent public access to one of the better streams in the region.

The above-mentioned gifts are gratefully acknowledged and represent properties of considerable value. The foresight and generosity of each donor and his obvious love of the great out-of-doors labels him as a giant among his fellowmen. The Division of Fisheries and Game, on behalf of all sportsmen and conservationists, extends to each benefactor the true hand of friendship.

Summary of Land Acquisitions

Fiscal 1974 and 1975

Area Name	Town	Acreage 1974	Acreage 1975
Hockomock Swamp W.M.A.	Easton, Taunton, Raynham, Norton, Bridgewater, West Bridgewater	1078	1499.10
Parker River W.M.A.	Newbury	467	237
Crane Pond W.M.A.	Georgetown, Groveland, West Newbury		111
Swift River W.M.A.	Ware	300	
Westboro W.M.A.	Westboro		153
Housatonic Valley W.M.A.	Lenox, Lee, Pittsfield	107	25.4
Millers River W.M.A.	Athol, Royalston	853	
North Shore W.M.A.	Rowley, Salisbury	93	23
Rocky Gutter W.M.A.	Middleboro	17.5	
Squannacook W.M.A.	Shirley	20	
Peterson Swamp W.M.A.	Halifax	250	
Shepherd Island W.M.A.	Northampton	15	
Nissitissit River W.M.A.	Pepperell	20	183.63
E. Kent Swift W.M.A.	Northbridge, Mendon, Uxbridge	157	
Chester W.M.A.	Chester	267	
Mill Creek W.M.A.	Rowley		.10
Pantry Brook W.M.A.	Sudbury		8.12
Sandwich Fish Hatchery	Sandwich		1.7
Bitzer Fish Hatchery	Montague		.3
	Totals	3644.5	2252.25

Personnel

Retirements

Eleanor Dowler, on 27 December 1974, as Principal Clerk in the Boston office. Employed by the Division since 4 February 1968 after previous service at Monson State Hospital.

Joseph Johnson, on 31 December 1974, as Chief of Realty in the Boston office. Employed by the Division since 21 August 1939.

Robert Corrinet, on 22 January 1975, as Game Manager in the Central Wildlife District. Employed by the Division since 11 September 1951.

Robert Macomber, on 30 June 1975, as Fish Culturist at the Sandwich State Fish Hatchery. Employed by the Division since April 1935.

Deaths

Eugene D. Moran, on 18 July 1973. Employed by the Division since 1 June 1955. At his death, he was the Western District Wildlife Manager in Pittsfield.

George Wood, on 2 May 1974. Employed by the Division since 1 August 1955. At his death, he was Fisheries Manager, Southeast Wildlife District in Buzzards Bay.

Legislation Enacted During Fiscal Year 1974

Chapter 129 of the Resolves of 1973: Resolve providing for an investigation and study by the Division of Fisheries and Game relative to certain hunting, fishing and wildlife matters. Signed: 17 September 1973.

Chapter 496 of the Acts of 1973: An act relative to the use of certain raptors for hunting purposes. Signed: 2 July 1973.

Chapter 769 of the Acts of 1973: An act providing for emergency projects under the law relating to the protection of the inland wetlands of the Commonwealth. Signed: 17 September 1973.

Chapter 879 of the Acts of 1973: An act authorizing the State Treasurer to receive funds from the Director of the Division of Fisheries and Game. Signed: 4 October 1973.

Chapter 900 of the Acts of 1973: An act authorizing the Director of the Division of Fisheries and Game to acquire certain land in the Town of Falmouth for wildlife management purposes. Signed: 11 October 1973.

Chapter 1071 of the Acts of 1973: An act requiring persons owning certain animals to be licensed by the Department of Natural Resources. Signed: 21 November 1973.

Chapter 420 of the Acts of 1974: An act providing for a Massachusetts waterfowl stamp. Signed: 26 June 1974.

Legislation Enacted During Fiscal Year 1975

Chapter 667 of the Acts of 1974: An act providing for the quarantine of certain diseased fish, birds, mammals, reptiles and amphibians. Signed: 31 July 1974.

Chapter 786 of the Acts of 1974: An act authorizing the Division of Fisheries and Game in the Department of Natural Resources to grant an easement on certain land in the Town of Conway. Signed: 9 August 1974.

Chapter 796 of the Acts of 1974: An act prohibiting the use of certain traps or other devices for the capture of fur-bearing mammals. Signed: 12 August 1974.

Chapter 806 of the Acts of 1974: An act establishing an Executive Office of Environmental Affairs. Signed: 12 August 1974.

Chapter 818 of the Acts of 1974: An act further regulating the protection of wetlands. Signed: 13 August 1974.

Chapter 30 of the Acts of 1975: An act relative to the penalty for the unlawful possession of a deer. Signed: 25 February 1975.

Chapter 147 of the Acts of 1975: An act requiring the approval of the Director of the Division of Waterways or the Director of the Division of Marine and Recreational Vehicles of rules and regulations relating to hunting and fishing on great ponds. Signed: 24 April 1975.

Chapter 162 of the Acts of 1975: An act redefining the term "loaded shotgun or rifle" in the law relative to inland fisheries and game. Signed: 30 April 1975.

Chapter 217 of the Acts of 1975: An act further regulating the issuance of minor's certificate of competency in the safe handling of firearms. Signed: 16 May 1975.

Chapter 334 of the Acts of 1975: An act relative to the enforcement of violations of the wetland act. Signed: 13 June 1975.

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME

General Administration

"How the Sportsman's Dollar was Spent" - FY 1974

ADMINISTRATION				
Administration	2670-0001	$151,016.43		
Board of Fisheries and Game	2670-0001	$ 150.00	$ 151,166.43	4.0%
Information-Education	2670-0001		$ 90,631.16	2.0%
FISHERIES PROGRAMS				
Fish Hatcheries	2670-2300		$ 527,130.25	13.0%
Fisheries Management	2670-2300	$242,755.27		
***Fish Restoration Projects	2670-2342	$ 71,855.05		
Fisheries Management	2670-2400	$146,880.86		
Fisheries Research Cooperative Unit	2670-2341	$ 10,000.00		
**Certain Anadromous Fish Projects	2670-2322	$ 21,470.14	$ 492,961.32	11.9%
WILDLIFE PROGRAMS				
Game Farms	2670-2400		$ 348,196.68	9.0%
Wildlife Management	2670-2400	$146,880.86		
Wildlife Research Cooperative Unit	2670-2441	$ 3,440.62		
*Damage by Wild Deer	2670-2451	$ 11,839.83		
***Wildlife Restoration Projects	2670-2461	$255,130.91	$ 422,292.22	10.0%
LAND ACQUISITION				
*Land and Water Acquisition and Development	2670-9013	$221,210.04		
*Coastal and Inland Wetlands	2670-9016	$984,913.68	$1,206,123.72	29.0%
ENGINEERING AND CONSTRUCTION				
*Pollution Abatement Facilities (McLaughlin Hatchery)	2670-9021	$ 8,854.84		
*Fish Screens (Quabbin Reservation)	2670-9022	$ 3,665.38		
*Fish Rearing Facilities (McLaughlin and Palmer hatcheries)	2670-9023	$ 46,658.81	$ 59,179.03	1.0%

"How the Sportsman's Dollar was Spent" - FY 1974 (Continued)

DEPARTMENT OF NATURAL RESOURCES					
Natural Resources Officers Salaries and Expenses	(26%)	2620-1000	$266,010.16		
****Supervision of Public Hunting and Fishing Grounds	(100%)	2620-0200	0		
Hunter Safety Training	(100%)	2620-0300	$ 41,170.00		
Office of the Commissioner	(.4%)	2600-0100	$ 2,559.46	$ 309,739.62	8.0%
SECRETARY, ENVIRONMENTAL AFFAIRS					
	(2%)	2000-0100	$ 3,471.40		
	(2%)	2000-0200	$ 1,378.30	$ 4,849.70	.1%
RETIREMENT ASSESSMENT					
	(.2%)	0612-1000		$ 102,365.79	2.0%
GROUP INSURANCE					
				$ 71,895.21	2.0%
INTEREST ON BONDED DEBT					
	(100%)	0699-2800		$ 89,800.00	2.0%
SERIAL BONDS AND NOTES					
	(100%)	0699-2900		$ 250,000.00	6.0%
				$4,126,331.13	100.0%

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* Continuing Appropriation
** 60% reimbursable Federal funds
*** 75% reimbursable Federal funds
**** Discontinued

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME

General Administration

"How the Sportsman's Dollar was Spent" - FY 1975

ADMINISTRATION				
Administration	2670-0001	$195,923.87		
Board of Fisheries and Wildlife	2670-0001	$ 350.00	$ 196,273.87	5.00%
Information-Education	2670-0001		$ 105,921.92	3.00%
FISHERIES PROGRAMS				
Fish Hatcheries	2670-2300		$ 507,648.24	13.00%
Fisheries Management	2670-2300	$358,164.82		
***Fish Restoration Projects	2670-2342	$ 78,548.78		
Fisheries Management	2670-2401	$228,430.06		
Fisheries Research Cooperative Unit	2670-2341	$ 13,750.00		
**Certain Anadromous Fish Projects	2670-2322	$ 16,310.48	$ 695,204.14	17.00%
WILDLIFE PROGRAMS				
Game Farms	2670-2401		$ 221,055.27	5.30%
Wildlife Management	2670-2401	$228,430.07		
Wildlife Research Cooperative Unit	2670-2441	$ 13,500.00		
*Damage by Wild Deer	2670-2451	$ 11,955.74		
Commonwealth Contribution, Waterfowl Marshes	2670-2420	$ 20,000.00		
***Wildlife Restoration Projects	2670-2461	$275,630.12	$ 549,515.93	14.00%
LAND ACQUISITION				
*Coastal and Inland Wetlands	2670-9016		$ 680,554.22	17.00%
ENGINEERING AND CONSTRUCTION				
Storage Building, Central District	2670-2464	$ 13,800.00		
Montague Building	2670-2465	$ 30,765.00		
Renovation of Lyman School Building	2670-8753	$ 16,666.86		
*Pollution Abatement	2670-9021	$ 908.75		
*Fish Screens	2670-9022	$ 97,239.75		
*Fish Rearing Facilities	2670-9023	0	$ 159,380.36	4.00%

"How the Sportsman's Dollar was Spent" - FY 1975 (Continued)

DEPARTMENT OF NATURAL RESOURCES				
Natural Resources Officers Salaries and Expenses	(25%)	2620-0100	$ 288,076.20	7.00%
Hunter Safety Training	(100%)	2620-0300	$ 40,738.00	1.00%
Office of the Commissioner	(.4%)	2600-0100	$ 2,859.75	.08%
SECRETARY, ENVIRONMENTAL AFFAIRS				
Office of the Secretary	(2%)	2000-0100	$ 4,563.20	.12%
Environmental Impact Administration, Etc.	(2%)	2000-0200	$ 2,600.00	.07%
CENTRAL SERVICES DIVISION				
Administration of State Vehicles Management Bureau	(2%)	1102-5201	$ 1,858.96	
For Fuel and Repairs of Certain Motor Vehicles	(2%)	1102-5211	$ 3,862.40	
For Replacement of State-Owned Motor Vehicles	(2%)	1102-5221	$ 11,029.00	.43%
RETIREMENT ASSESSMENT	(.2%)	0612-1000	$ 139,395.09	3.00%
GROUP INSURANCE			$ 70,804.00	2.00%
INTEREST ON BONDED DEBT	(100%)	0699-2800	$ 81,450.00	2.00%
SERIAL BONDS AND NOTES	(100%)	0699-2900	$ 250,000.00	6.00%
			$4,012,790.55	

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* Continuing Appropriation
** 60% Reimbursable Federal funds
*** 75% Reimbursable Federal funds

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME

Appropriations and Expenditures

Fiscal Year 1 July 1973 to 30 June 1974

Account No.	Title	Appropriation	Expenditures and Liabilities	Total Reversion
2670-0001	Administration	$ 263,165.00	$ 241,797.59	$ 21,367.41
2670-2300	Fisheries Management	$ 777,786.00	$ 769,885.52	$ 7,900.48
***2670-2342	Fish Restoration Projects	$ 83,480.00	$ 71,855.05	$ 11,624.95
**2670-2322	Anadromous Fish Projects	$ 22,000.00	$ 21,470.14	$ 529.86
2670-2401	Wildlife Management	$ 643,443.00	$ 641,958.40	$ 1,484.60
***2670-2461	Wildlife Restoration Projects	$ 258,115.00	$ 255,130.91	$ 2,984.09
		$2,047,989.00	$2,002,097.61	$ 45,891.39

		Continuing Appropriations	Expenditures	Balance Forward
2670-2451	Damage by Wild Deer	$ 16,679.49	$ 11,839.83	$ 4,839.66
2670-9013	Land Acquisition and Development	$ 223,710.04	$ 221,210.04	$ 2,500.00
2670-9016	Coastal and Inland Wetlands	$4,987,876.20	$ 984,913.68	$4,002,962.52
2670-9021	Pollution Abatement (McLaughlin Hatchery)	$ 92,900.00	$ 8,854.84	$ 84,045.16
2670-9022	Fish Screens, Quabbin Reservation	$ 110,000.00	$ 3,665.38	$ 106,334.62
2670-9023	Fish Rearing Facilities (McLaughlin and Palmer Hatcheries)	$ 47,100.00	$ 46,658.81	$ 441.19
		$5,478,265.73	$1,277,142.58	$4,201,123.15

** 60% Reimbursable Federal funds
*** 75% Reimbursable Federal funds

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND GAME

Appropriations and Expenditures

Fiscal Year 1 July 1974 to 30 June 1975

Account No.	Title	Appropriation	Expenditures and Liabilities	Total Reversion
2670-0001	Administration	$ 305,354.00	$ 302,195.79	$ 3,158.21
2670-2300	Fisheries Management	$ 868,634.00	$ 865,813.06	$ 2,820.94
2670-2322**	Anadromous Fish Projects	$ 22,500.00	$ 16,310.48	$ 6,189.52
2670-2342***	Fish Restoration Projects	$ 80,990.00	$ 78,548.78	$ 2,441.22
2670-2401	Wildlife Management	$ 682,900.00	$ 677,915.40	$ 4,984.60
2670-2461***	Wildlife Restoration Projects	$ 277,729.00	$ 275,630.12	$ 2,098.88
2670-2464	Storage Building, Central District	$ 14,000.00	$ 13,800.00	$ 200.00
2670-2465	Montague Building	$ 36,000.00	$ 30,765.00	$ 5,235.00
2670-2420	Commonwealth Contributions, Waterfowl Marshes	$ 20,000.00	$ 20,000.00	$ 0
		$2,308,107.00	$2,280,978.63	$ 27,128.37
		Continuing Appropriations	Expenditures	Balance Forward
2670-2451	Damage by Wild Deer	$ 13,989.66	$ 11,955.74	$ 2,033.92
2670-8753	Renovation of Lyman School Building	$ 40,000.00	$ 16,666.86	$ 23,333.14
2670-9013	Land Acquisition and Development	$ -	$ -	$ -
2670-9016	Coastal and Inland Wetlands	$4,002,962.52	$ 680,554.22	$3,322,408.30
2670-9021	Pollution Abatement, McLaughlin Hatchery	$ 81,967.72	$ 908.75	$ 81,058.97
2670-9022	Fish Screens, Quabbin Reservation	$ 108,412.06	$ 97,239.75	$ 11,172.31
2670-9023	Fish Rearing Facilities, McLaughlin and Palmer Hatcheries	$ 441.19	$ -	$ 441.19
		$4,247,773.15	$ 807,325.32	$3,440,447.83

** 60% Reimbursable Federal funds
*** 75% Reimbursable Federal funds

SUMMARY OF FISH AND GAME INCOME

1 July 1973 to 30 June 1974

Fishing, Hunting and Trapping Licenses	$2,522,620.75*
Special Licenses, Trap Registrations and Tags	$ 10,985.25**
Archery Stamps	$ 25,787.90
Antlerless Deer Permits	$ 16,352.85
Rents	$ 5,467.25
Miscellaneous and Sales	$ 2,734.11
Court Fines	$ 15,029.00
Refunds Prior Year	$ 964.76
Pittman-Robertson Federal Aid	$ 149,029.34
Dingell-Johnson Federal Aid	$ 223,925.41
Anadromous Fish Projects, Federal Aid	$ 3,609.07
Massachusetts Mourning Dove and Woodcock Reimbursement	$ -
Reimbursement of Services	$ 19,426.18
	$2,995,931.87

*See Detail Sheet No. 1
**See Detail Sheet No. 2

OTHER INCOME-INLAND FISHERIES AND GAME FUND

Interest on Investments	$ 5,803.28
Gasoline Tax Apportionment	$ 291,536.36
Surplus in Inland Fisheries and Game Fund as of 30 June 1974	$ 891,093.24

SUMMARY OF FISH AND GAME INCOME

1 July 1974 to 30 June 1975

Fishing, Hunting and Trapping Licenses	$2,567,290.30*
Special Licenses, Trap Registrations and Tags	$ 11,487.65**
Archery Stamps	$ 29,947.20
Waterfowl Stamps, Ducks Unlimited	$ 23,148.80
Waterfowl Stamps	$ 6,209.95
Antlerless Deer and Bear Permits	$ 15,532.70
Rents	$ 5,653.75
Miscellaneous and Sales	$ 11,045.55
Court Fines	$ 12,263.75
Refunds Prior Year	$ 388.29
Pittman-Robertson Federal Aid	$ 210,496.42
Dingell-Johnson Federal Aid	$ 35,513.61
Anadromous Fish Projects, Federal Aid	$ 56,330.46
Massachusetts Mourning Dove and Woodcock Reimbursement	$ 4,644.72
Reimbursement, Acquisition Projects	$ 153,526.58
Reimbursement of Services, Water Pollution Control	$ 35,390.16
	$3,178,869.89

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*See Detail Sheet No. 1
**See Detail Sheet No. 2

OTHER INCOME AND INLAND FISHERIES AND GAME FUND

Interest on Investments	$ 3,450.23
Gasoline Tax Apportionment	$ 291,615.00
Surplus in Inland Fisheries and Game Fund as of 30 June 1975	$1,152,344.32

Detail Sheet No. 1

DIVISION OF FISHERIES AND GAME

Receipts from Fishing, Hunting and Trapping Licenses

Fiscal Year 1 July 1973 to 30 June 1974

	Licenses	Price	Number	Gross Amount	Fees Retained By Town Clerk or City	Net Returned to State
Series #1	Res. Cit. Fishing	8.25	140,300	$1,157,475.00	$34,800.50	$1,122,674.50
Series #2	Res. Cit. Hunting	8.25	58,375	$ 481,593.75	$14,485.00	$ 467,108.75
Series #3	Res. Cit. Sporting	13.50	53,069	$ 716,431.50	$13,158.00	$ 703,273.50
Series #4	Res. Cit. Minor Fishing	6.25	15,047	$ 94,043.75	$ 3,753.25	$ 90,290.50
Series #5	Alien Fishing	11.25	1,068	$ 12,015.00	$ 260.00	$ 11,755.00
Series #6	Non-Res. Alien Fishing	14.25	3,053	$ 43,505.25	$ 756.25	$ 42,749.00
Series #7	Non-Res. Alien 7-Day Fishing	8.25	1,908	$ 15,741.00	$ 473.50	$ 15,267.50
Series #8	Non-Res. Alien Hunting S.G.	20.25	687	$ 13,911.75	$ 168.25	$ 13,743.50
Series #9	Non-Res. Alien 3-Day Hunting C.S.P.	16.25	92	$ 1,495.00	$ 5.50	$ 1,489.50
Series #10	Res. Cit. Minor Trapping	6.25	320	$ 2,000.00	$ 79.50	$ 1,920.50
Series #11	Res. Cit. Trapping	11.50	776	$ 8,924.00	$ 191.00	$ 8,733.00
Series #12	Duplicate Licenses	1.00	3,565	$ 3,565.00	$ 0	$ 3,565.00
Series #13	Res. Alien Hunting	16.25	732	$ 11,895.00	$ 8.00	$ 11,887.00
Series #14	Non-Res. Alien Hunting B.G.	35.25	754	$ 26,578.50	$ 186.50	$ 26,392.00
Series #15	Res. Cit. Sporting Over 70	Free	18,797			
Series #16	Res. Cit. Fishing for Blind, Mentally Retarded and Paraplegic	Free	395			
Series #17	Res. Cit. Hunting for Paraplegic	Free	77			
			299,515	$2,589,174.50	$68,325.25	$2,520,849.25
				$ 2,022.50*		$ 2,022.50*
				$2,591,197.00		$2,522,871.75
				$ - 251.00**		$ - 251.00**
			299,515	$2,590,946.00	$68,325.25	$2,522,620.75

* Monies recovered following robberies at the offices of three Town Clerks.

** Refunds and bad checks.

Detail Sheet No. 1

DIVISION OF FISHERIES AND GAME
Receipts from Fishing, Hunting and Trapping Licenses
Fiscal Year 1 July 1974 to 30 June 1975

Licenses	Price	Number	Gross Amount	Fees Retained by Town Clerk or City	Net Returned to State
Series # 1 Res. Cit. Fishing	8.25	145,460	$1,200,045.00	$36,098.25	$1,163,946.75
Series # 2 Res. Cit. Hunting	8.25	55,415	$ 457,173.75	$13,756.00	$ 443,417.75
Series # 3 Res. Cit. Sporting	13.50	54,251	$ 732,388.50	$13,430.75	$ 718,957.75
Series # 4 Res. Cit. Minor Fishing	6.25	16,629	$ 103,931.25	$ 4,147.75	$ 99,783.50
Series # 5 Res. Alien Fishing	11.25	1,165	$ 13,106.25	$ 281.00	$ 12,825.25
Series # 6 Non-Res. Alien Fishing	14.25	2,867	$ 40,854.75	$ 709.25	$ 40,145.50
Series # 7 Non-Res. Alien 7-Day Fishing	8.25	$ 1,857	$ 15,320.25	$ 459.50	$ 14,860.75
Series # 8 Non-Res. Alien Hunting S.G.	20.25	686	$ 13,891.50	$ 163.75	$ 13,727.75
Series # 9 Non-Res. Alien Hunting C.S.P., 3-Day S.G.	16.25	20	$ 325.00	$ 5.00	$ 320.00
Series #10 Res. Cit. Minor Trapping	6.25	374	$ 2,337.50	$ 93.25	$ 2,244.25
Series #11 Res. Cit. Trapping	11.50	745	$ 8,567.50	$ 183.25	$ 8,384.25
Series #12 Duplicate Licenses	1.00	3,490	$ 3,490.00	$ -	$ 3,490.00
Series #13 Resident Alien Hunting	16.25	894	$ 14,527.50	$ 7.50	$ 14,520.00
Series #14 Non-Res. Alien Hunting B.G.*	35.25	679	$ 23,934.75	$ 169.00	$ 23,765.75
Series #15 Res. Cit. Sporting over 70	Free	19,952			
Series #16 Res. Cit. Fishing for Blind, Mentally Retarded and Paraplegic	Free	1,008			
Series #17 Res. Cit. Hunting for Paraplegics	Free	92			
Series #18 Archery Stamps	5.10	5,872	$ 29,947.20	$ 584.20	$ 29,363.00
		311,456	$2,659,840.70	$70,088.45	$2,589,752.25
			$ 1,019.50**		$ 1,019.50**
			$ 7,065.00***		$ 7,065.00***
			$ 444.50****		$ 444.50****
			$2,668,369.70		$2,598,281.25
			$ - 24.25*****		$ - 24.25*****
			$2,668,345.45	$70,088.45	$2,598,257.00

*This series includes Non-Res. Cit./Non-Res. Alien Hunting (Big Game)

**Trap Registrations, see Detail Sheet No. 2

***Monies received from delinquent cities/towns for previous year

****Robbery reimbursement from cities/towns

*****Refunds

Detail Sheet No. 2

DEPOSITS

Fiscal Year 1 July 1973 to 30 June 1974

3304-61-01-40	Trap Registration		
	Initial	183 @ $ 2.00	$ 366.00
	Renewal	351 @ $ 1.50	$ 526.50
	Renewal (Duplicate)	1 @ $ 1.00	$ 1.00
3304-61-02-40	Fur Buyers		
	Resident Citizen	22 @ $15.00	$ 330.00
	Non-Resident or Alien	7 @ $50.00	$ 350.00
3304-61-03-40	Taxidermist	85 @ $10.00	$ 850.00
3304-61-04-40	Propagators		
	Special Purpose Permit	90 @ $ 1.00	$ 90.00
	Class 1 (Special Fish)		
	Initial	16 @ $ 7.50	$ 120.00
	Renewal	150 @ $ 5.00	$ 750.00
	Class 2	0 @ No fee	
	Class 3 (Fish)		
	Initial	9 @ $ 7.50	$ 67.50
	Renewal	75 @ $ 5.00	$ 375.00
	Class 4 (Birds and Mammals)		
	Initial	80 @ $ 7.50	$ 592.50
	Renewal	438 @ $ 5.00	$ 2,190.00
	Class 5	5 @ No fee	
	Class 6 (Dealers)		
	Initial	8 @ $ 7.50	$ 60.00
	Renewal	66 @ $ 5.00	$ 330.00
	Additional	402 @ $ 1.50	$ 603.00
	Class 7 (Individual Bird or Mammal)		
	Initial	20 @ $ 3.00	$ 60.00
	Renewal	63 @ $ 1.00	$ 63.00
	Importation Permits		
	Fish	8 @ $ 5.00	$ 40.00
	Birds and Mammals	33 @ $ 5.00	$ 165.00
3304-61-05-40	Take Shiners	110 @ $ 5.00	$ 550.00
	Duplicate	1 @ $ 1.00	$ 1.00
3304-61-06-40	Field Trial License	6 @ $15.00	$ 90.00
3304-61-07-40	Taking of Carp and Suckers for Sale		
3304-61-08-40	Quail for Training Dogs		
	Initial	14 @ $ 7.50	$ 105.00
	Renewal	60 @ $ 5.00	$ 300.00
3304-61-10-40	Commercial Shooting Preserves	14 @ $50.00	$ 500.00
3304-61-11-40	Trapping of Certain Birds	@ $ 5.00	$ 200.00*
3304-61-12-40	Mounting Permit	7 @ $ 2.00	$ 14.00
3304-64-01-40	Game Tags	7315 @ $ .05	$ 365.75
	Fish Tags	18100 @ $ .01	$ 181.00
3304-61-13-40	Special Field Trial Permit	28 @ $15.00	$ 420.00
3304-61-14-40	Special Permits		
	Bear	309 @ $ .50	$ 154.50
	Deer (Landowner/farmer)	349 @ $ .50	$ 174.50
		Total	$10,985.25

DEPOSITS Detail Sheet No. 2

Fiscal Year 1 July 1974 to 30 June 1975

3304-61-01-40	Trap Registration			
	Initial	252	@ $ 2.00	$ 504.00
	Renewal	341	@ $ 1.50	$ 511.50
	Duplicate	4	@ $ 1.00	$ 4.00
3304-61-02-40	Fur Buyers			
	Resident Citizen	27	@ $15.00	$ 405.00
	Non-Resident or Alien	8	@ $50.00	$ 400.00
3304-61-03-40	Taxidermist	102	@ $10.00	$ 1,020.00
3304-61-04-40	Propagators			
	Special Purpose Permit	169	@ $ 1.00	$ 169.00
	Class 1 (Special Fish)			
	Initial	17	@ $ 7.50	$ 127.50
	Renewal	154	@ $ 5.00	$ 770.00
	Class 3 (Fish)			
	Initial	6	@ $ 7.50	$ 45.00
	Renewal	72	@ $ 5.00	$ 360.00
	Class 4 (Birds and Mammals)			
	Initial	113	@ $ 7.50	$ 847.50
	Renewal	416	@ $ 5.00	$ 2,080.00
	Duplicate	1	@ $ 1.00	$ 1.00
	Class 6 (Dealers)			
	Initial	3	@ $ 7.50	$ 22.50
	Renewal	60	@ $ 5.00	$ 300.00
	Additional	380	@ $ 1.50	$ 570.00
	Duplicate	3	@ $ 1.00	$ 3.00
	Class 7 (Individual Bird or Mammal)			
	Initial	27	@ $ 3.00	$ 81.00
	Renewal	51	@ $ 1.00	$ 51.00
	Importation Permit			
	Fish	42	@ $ 5.00	$ 210.00
	Birds and Mammals	0	@ $ 5.00	
3304-61-05-40	Take Shiners	137	@ $ 5.00	$ 685.00
3304-61-06-40	Field Trial License	5	@ $15.00	$ 75.00
3304-61-07-40	Taking of Carp and Suckers For Sale	0	@ $10.00	
3304-61-08-40	Quail for Training Dogs			
	Initial	20	@ $ 7.50	$ 150.00
	Renewal	48	@ $ 5.00	$ 240.00
3304-61-10-40	Commercial Shooting Preserves	14	@ $50.00	$ 700.00
3304-61-11-40	Trapping of Certain Birds	0	@ $ 5.00	
3304-61-12-40	Mounting Permit	5	@ $ 2.00	$ 10.00
3304-64-01-40	Game Tags	632	@ $ .05	$ 316.40
	Fish Tags	15,800	@ $ .01	$ 158.00
3304-61-13-40	Special Field Trial Permit	34	@ $15.00	$ 510.00
3304-64-01-40	Commercial Shooting Preserve Pheasant tags, posters	725	@ $ .05	$ 36.25
3304-61-14-40	Special: Bear (320); Deer (393)	713	@ $ .50	$ 356.50*
3304-61-04-40	Class 9 Falconer License	2	@ $25.00	$ 50.00
	Class 10 Raptor Breeding and Salvage License	3	@ $25.00	$ 75.00
3304-69-99-40	Miscellaneous Donation			$ 3.00*
				$11,847.15

* Included in summary figures.